Accounting Program Code 101011 | Associate Degree

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Accounting prepares students for positions as accountants. Accountants work with accounting systems, analyze business records, prepare financial reports, and supervise bookkeepers.

Program Outcomes
- Manage general ledger.
- Manage accounts receivable.
- Manage accounts payable.
- Maintain inventory control.
- Prepare payroll.
- Prepare income taxes.
- Account for fixed assets.
- Perform job order cost accounting.
- Perform process cost accounting.
- Perform standard cost accounting.
- Analyze financial statements.
- Prepare budgets.
- Manage cash flows.
- Use corporate accounting procedures.
- Analyze accounting information to make appropriate decisions.
- Perform reconciliation procedures.
- Create spreadsheets.
- Perform accounting functions using computerized accounting packages.
- Demonstrate proficiency in math using table top calculator and T.I. Business Analyst calculator.
- Perform activity-based costing.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Basic math (algebra recommended).
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer)

with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Accounts Payable/Receivable Accountant: records and pays bills of the company, records receivables transactions, bills customers at regular intervals, records charges and payments.

Payroll Accountant: handles the payroll for a business; end-of-period reports; time cards; computes overtime, deducts taxes, and prepares payroll checks; and reconciles payroll accounts.

Inventory Control Accountant: records receipt and dispersal of goods using a perpetual inventory system, assigns costs using an inventory valuation method.

Cost Accountant: determines cost of products manufactured; determines variations from standards in labor, materials, and overhead; prepares budgets; and prepares various management reports.

Public Accountant: keeps records for small business; prepares payroll records; prepares financial records, income statements, and balance sheets.

Accountant: keeps financial records, prepares financial records (income statements, balance sheets, budgets, and summary reports), and analyzes accounts.

Tax Accountant: prepares tax returns for both state and federal governments, assists in tax planning and tax shelters, and files payroll reports and quarterly reports as required by government agencies.

Governmental/Nonprofit Accountant: keeps records of governmental/nonprofit agencies using the fund method of accounting.

Curriculum
Students following the study plan below will complete the Accounting associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-101-107	Accounting Applications/Proc	2
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER		
10-101-105	Accounting-Computer Ledger	2
10-101-120	Accounting 2	4
10-101-151	Accounting-Payroll	3
10-801-196	Oral/Interpersonal Comm	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-131	Accounting-Intermediate	4
10-101-134	Accounting-Cost	4
10-101-154	Accounting-Personal Tax	4
10-101-189	Accounting-Applying Quickbooks	3
10-114-109	Credit-Policies/Procedures	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-101-142	Accounting-Managerial	3
10-101-143	Accounting-Govern/Nonprofit	2
10-101-152	Accounting-Business Tax	2
10-101-153	Accounting-Computerized Tax	1
10-101-156	Accounting-Auto Appl	3
10-102-100	Bus and Info Tech Occup Prep	1
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
TOTAL CREDITS		70

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Auditor
- Certified Public Accountant
- Comptroller
- Treasurer
- Trust Officer

The following certificates/technical diplomas may be applied toward this program:
- 311011, Accounting Assistant
- 901011, Small Business Bookkeeping Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-105 ACCOUNTING-COMPUTER LEDGER ...applications on calculators or keypad such as addition, subtraction, multiplication, division, percent, and computers using Microsoft Excel. (Prerequisites: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles; 10-103-131, Micro: Excel-Intro; 10-103-132, Micro: Excel-Part 2)

10-101-107 ACCOUNTING APPLICATIONS AND PROCEDURES ...use of financial calculator, checkbook records, purchasing, shipping/receiving, A/R, and A/P systems, markups, discounts, credit charges, time value of money, depreciation methods, inventory methods, and financial statement analysis.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-101-120 ACCOUNTING 2 ...inventories, fixed assets, current liabilities including payroll and notes payable, business formations, capital stocks, dividends, bonds, cash flow statements, and financial statement analysis. (Prerequisite: 10-101-110, Accounting 1; 10-804-123, Math w/Business Apps)

10-101-131 ACCOUNTING-INTERMEDIATE ...understand income statements, balance sheets, cash flow statements, cash and receivables, inventories and cost of goods sold, noncurrent operating assets, earnings per share, accounting changes and corrections, financial statement analysis. (Prerequisite: 10-101-120, Accounting 2)

10-101-134 ACCOUNTING-COST ...contemporary cost environments and issues; selecting, analyzing, and tracking costs; production costing methods: job order, process, standard costs, by-product, and joint costing. (Prerequisites: 10-101-105, Accounting-Computer Ledger; 10-101-120, Accounting 2)

10-101-142 ACCOUNTING-MANAGERIAL ...cost behavioral patterns, cost-volume-profit relationships, segment reporting, profit planning, budgets and overhead analysis, decentralized operations, pricing decisions, capital investment decisions, and service department costing. (Prerequisite: 10-101-134, Accounting-Cost)

10-101-143 ACCOUNTING-GOVERNMENTAL & NONPROFIT ...use fundamental knowledge for understanding the operation of governmental and nonprofit entities, their accounting, and financial reporting practices and the standards that shape their accounting and financial reporting systems. (Prerequisite: 10-101-120, Accounting 2)

10-101-151 ACCOUNTING-PAYROLL ...payroll and personnel records, social security, withholding tax, unemployment compensation, time sheets and time-keeping records, and legal aspects of payroll. (Prerequisite: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles)

10-101-152 ACCOUNTING-BUSINESS TAX ...learners will be introduced to federal tax laws as they apply to business entities and will prepare business income tax returns. (Prerequisite: 10-101-154, Accounting-Personal Tax)

10-101-153 ACCOUNTING-COMPUTERIZED TAX ...learners will prepare individual income tax returns using a commercial software package. Requires completion of the Accounting-Personal Tax course. (Prerequisite: 10-101-154, Accounting-Personal Tax)

10-101-154 ACCOUNTING-PERSONAL TAX ...history and research of tax law and regulations; preparation of federal individual income taxes including forms 1040, 1040A, and 1040EZ, and supporting schedules and forms.

10-101-156 ACCOUNTING-AUTOMATED APPLICATIONS ...Windows, file management, worksheet applications, database applications, macros, evaluation of accounting software, installation of software, and conversion of manual accounting system to a computerized system. (Prerequisites: 10-101-120, Accounting 2; 10-101-105, Accounting-Computer Ledger; 10-103-121. Micro: Word-Intro; 10-801-136, English Composition I; 10-804-123, Math w Business Apps)

10-101-189 ACCOUNTING-APPLYING QUICKBOOKS ...learners will be introduced to basic and advanced features of Quickbooks and will apply skills in realistic business simulations including creating accounts, invoicing, budgeting, preparing statements, journalizing and graphing. (Prerequisite: 10-101-110, Accounting 1)

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self- exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequisite: 10-103-131, Micro: Excel-Intro)

10-114-109 CREDIT-POLICIES AND PROCEDURES ...credit/collection policies, procedures, and law, credit investigations, evaluate credit worthiness, support credit decisions, create credit forms, fraud, bankruptcy, techniques to control and manage accounts receivable. (Prerequisite: 10-101-110, Accounting 1 or 10-101-106, Accounting for Non-Accountants)

Accounting Assistant   Program Code 311011 | Technical Diploma

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Accounting Assistant prepares students for entry-level accounting positions. Accounting Assistants work with accounts receivable, accounts payable, inventory, and payroll.

Program Outcomes
• Manage general ledger.
• Manage accounts receivable.
• Manage accounts payable.
• Maintain inventory control.
• Prepare payroll.
• Account for fixed assets.
• Analyze financial statements.
• Use corporate accounting procedures.
• Perform reconciliation procedures.
• Create spreadsheets.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• Basic math (algebra recommended).
• Ability to use computer keyboard.

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Accounts Payable/Receivable Accountant: records and pays bills of the company, records receivables transactions, bills customers at regular intervals, records charges and payments.

Payroll Accountant: handles the payroll for a business; end-of-period reports; time cards; computes overtime, deducts taxes, and prepares payroll checks; and reconciles payroll accounts.

Inventory Control Accountant: records receipt and dispersal of goods using a perpetual inventory system, assigns costs using an inventory valuation method.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Cost Accountant
• Accountant
• Tax Accountant

Note: These credits can be applied to the first year of the two-year Accounting program.

The following certificates/technical diplomas may be applied toward this program:
• 901011, Small Business Bookkeeping

Curriculum
Students following the study plan below will complete the Accounting Assistant technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-101-107	Accounting Applications/Proc	2
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER		
10-101-105	Accounting-Computer Ledger	2
10-101-120	Accounting 2	4
10-101-151	Accounting-Payroll	3
10-101-189	Accounting-Applying Quickbooks	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		15
TOTAL CREDITS		31

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-105 ACCOUNTING-COMPUTER LEDGER ...applications on calculators or keypad such as addition, subtraction, multiplication, division, percent, and computers using Microsoft Excel. (Prerequisites: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles; 10-103-131, Micro: Excel-Intro; 10-103-132, Micro: Excel-Part 2)

10-101-107 ACCOUNTING APPLICATIONS AND PROCEDURES ...use of financial calculator, checkbook records, purchasing, shipping/receiving, A/R, and A/P systems, markups, discounts, credit charges, time value of money, depreciation methods, inventory methods, and financial statement analysis.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-101-120 ACCOUNTING 2 ...inventories, fixed assets, current liabilities including payroll and notes payable, business formations, capital stocks, dividends, bonds, cash flow statements, and financial statement analysis. (Prerequisite: 10-101-110, Accounting 1; 10-804-123, Math w/Business Apps)

10-101-151 ACCOUNTING-PAYROLL ...payroll and personnel records, social security, withholding tax, unemployment compensation, time sheets and time-keeping records, and legal aspects of payroll. (Prerequisite: 10-101-110, Accounting 1 OR 10-101-101, Accounting Principles)

10-101-189 ACCOUNTING-APPLYING QUICKBOOKS ...learners will be introduced to basic and advanced features of Quickbooks and will apply skills in realistic business simulations including creating accounts, invoicing, budgeting, preparing statements, journalizing and graphing. (Prerequisite: 10-101-110, Accounting 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequiste: 10-103-131, Micro: Excel-Intro)

Administrative Professional Program Code 101066 | Associate Degree

Offered at the Green Bay and Marinette campuses. Most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Administrative Professional students learn to be efficient and effective office employees through application of business procedures (proofreading, telephone messaging, records management, meeting and travel arrangements, communication, project management, Internet research, etc.) and software skills (Windows, word processing, spreadsheets, presentation graphics, web creation, electronic calendaring, and database).

All software materials assist in preparing students for the Microsoft Office Specialist (MOS) certification exams.

With additional education and/or work experience, students will be prepared for certification exams offered by the International Association of Administrative Professionals (IAAP).

Program Outcomes

• Demonstrate effective workplace communications.
• Apply technology skills to business and administrative tasks.
• Perform routine administrative procedures.
• Manage administrative projects.
• Maintain business relationships.
• Model professionalism in the workplace.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
• Basic math.
• Keyboarding proficiency at 30 WPM using the TOUCH method is required. (Mandatory pre-admission keyboarding test to be taken at the NWTC Assessment Center.)
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program

courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Administrative Professional: schedules appointments; communicates effectively in person, on the phone, and in writing; prepares agendas; takes minutes; arranges itineraries; schedules travel plans; processes mail; uses word processing, spreadsheets, presentation graphics, electronic calendaring, desktop publishing, web creation, and/or database software; maintains confidentiality, and possibly supervises others.

Customer Service Representative: receives and places telephone calls; maintains solid customer relationships by handling their questions and concerns with speed and professionalism; performs data entry and uses software programs; may require research skills to troubleshoot customer problems; excellent communication abilities.

Front Desk Coordinator: manages the companyís lobby area; greets and directs all visitors, including vendors, clients, job candidates and customers; ensures completion of paperwork, sign-in and security procedures; handles special administrative projects as well as overflow work from department and executive assistants; depending on the size of the firm, also may answer incoming calls.

Office/Facilities Manager: coordinates various office support services, including purchasing and facilities management. Requires strong communication skills and some accounting knowledge. May include supervision of office administrative staff.

Project Coordinator: works with internal and external parties to organize the various components needed to initiate, run and conclude major projects. Duties include coordinating schedules and activities, placing orders for supplies and services, and tracking progress and results. Requires excellent communication skills and extensive knowledge of database and project management software. Often reports to product development, project management or marketing executives. The position is especially prevalent in construction, transportation and technology industries.

Virtual Assistant: works from own premises and provides office support services such as making customer contacts; writing reports; editing documents; sending out marketing materials; setting up and maintaining databases; handling billing and bookkeeping; and updating websites.

With additional education and/or work experience, graduates may find other opportunities for employment.

Curriculum

Students following the study plan below will complete the Administrative Professional associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-103-121	Micro: Word-Intro	1
10-103-122	Micro: Word-Part 2	1
10-103-151	Micro: PowerPoint-Intro	1
10-105-102	Career Planning	2
10-106-102	Info Process Principles	2
10-106-107	Keyboard-Speed Building 1	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
*10-801-136	English Composition 1	3
**10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-106-127	Admin Business Procedures 1	3
10-106-132	Proofreading/Editing Essen 2	3
10-106-142	Software Projects	3
10-106-154	Records Management	3
10-106-157	Office Politics	1
10-106-172	Telephone/Messaging Skills	1
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-103-132	Micro: Excel-Part 2	1
10-103-142	Micro: Access-Part 2	1
10-103-163	Micro: Expression Web	1
10-105-103	Career Preparation	1
10-106-125	Skills for Admin Leadership	3
10-106-136	Admin Business Procedures 2	3
10-809-197	Contemporary Amer Society	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-101-103	Accounting Principles-Applied	2
10-106-137	Integrated Software Applic	2
10-106-199	Admin Prof Career Experience	2
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		15
TOTAL CREDITS		68

CURRICULUM NOTE
* Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-106-197, Technical Reporting.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Portfolio: Students are required to complete a program portfolio prior to graduation.

SUGGESTED ELECTIVES
Micro: Publication Software, 10-103-165
Supervisors-Personal Skills, 10-196-164
Customer Service, 10-104-191

• Executive Assistant
• Office Manager
• Trainer/Instructor
• Event Coordinator
• Team Leader

The following certificates/technical diplomas may be applied toward this program:

• 311061, Office Professional Technical Diploma
• 901031, Software Level 1 Certificate
• 901032, Software Level 2 Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-103 ACCOUNTING PRINCIPLES-APPLIED ...the accounting fundamentals, recording of business transactions, preparation of financial statements, accrual accounting, accounting for service enterprises and merchandising businesses, payroll, and use of Quickbooks software.

10-103-111 MICRO: WINDOWS/COMPUTER BASICS ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. Blackboard, internet, and e-mail usage.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. (Corequisite: 10-103-121, Micro: Word-Intro)

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequisite: 10-103-131, Micro: Excel-Intro)

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating/modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-142 MICRO: ACCESS-PART 2 ...creating advanced queries, custom forms, multi-page forms, custom reports, pivot tables, pivot charts, and labels. (Corequisite: 10-103-141, Micro: Access-Intro)

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-103-163 MICRO: EXPRESSION WEB ...create a website, customize, manage pages and images; create interactive forms using CSS style sheets; publish web pages to a web server. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-106-102 INFORMATION PROCESSING PRINCIPLES ...an introduction to the information processing cycle including new technology, computer system unit, Internet research, input and output devices, software, networks, ergonomics, and data storage.

10-106-107 KEYBOARD-SPEED BUILDING 1 ...skill development on the alphabetic keyboard using analytic/diagnostic software. Requires touch keyboarding at 30 wpm. Students can learn touch keyboarding method in 10-106-145, Keyboarding.

10-106-125 SKILLS FOR ADMINISTRATIVE LEADERSHIP ...understanding of leadership, collaboration, quality management, utilization of data in decision-making, and introduction to software applications utilized in project management. (Corequisite: 10-106-136, Administrative Business Procedures 2; Prerequisites: 10-106-153, Professional Profile; 10-106-157, Office Politics)

10-106-127 ADMINISTRATIVE BUSINESS PROCEDURES 1 ...today's business environment includes management of prioritization and organizational skills, workplace mail and copying, meeting coordination, and creating effective business communication using appropriate formats and variety of application tools. (Prerequisites: 10-106-131, Proofreading/Editing Essentials 1; 10-106-102, Information Processing Principles; Corequisite: 10-106-142, Software Projects)

10-106-131 PROOFREADING/EDITING ESSENTIALS 1 ...develop skills for using, identifying, and correcting grammar, spelling, punctuation, capitalization, numbers and abbreviations to creat error-free business documents. Introduction to and use of reference resources and portfolio guidelines. (Corequisite: 10-801-136, English Composition 1)

10-106-132 PROOFREADING/EDITING ESSENTIALS 2 ...apply advanced proofreading, editing and composition skills in electronic and business documents using reference manuals and other resources. Multitasking and decision-making skills are enhanced through proofreading abilities. (Prerequisite: 10-106-131, Proofreading/Editing Essentials 1)

10-106-136 ADMINISTRATIVE BUSINESS PROCEDURES 2 ...global business environment including Internet-based research, event planning, customer service, technology integration, financial responsibilities, travel coordination, and career advancement. (Prerequisite: 10-106-127, Administrative Business Procedures 1)

10-106-137 INTEGRATED SOFTWARE APPLICATIONS ...manage data to prepare integrated documents using Word, Excel, Access, and PowerPoint, create an e-portfolio using Expression Web, and use practice certification software to demonstrate competencies. (Prerequisites: 10-103-122, Micro: Word-Part 2; 10-103-132, Micro: Excel-Part 2; 10-103-142, Micro: Access-Part 2; 10-103-151, Micro: PowerPoint-Intro; 10-103-163, Micro: Expression Web)

10-106-142 SOFTWARE PROJECTS ...applying Windows and Word features to manage and format business documents while exercising decision-making, increasing efficiency, and enhancing keyboarding skills. Windows, advanced Word, and minimum 45 wpm is highly recommended. (Prerequisite: 10-106-107, Keyboard-Speed Building 1; Corequisite: 10-103-122, Micro: Word-Part 2)

10-106-153 PROFESSIONAL PROFILE ...developing a professional image and attitude, including study of business ethics and etiquette; goal setting; anger, stress, and time management; understanding of diverse cultures; and development of platform skills.

10-106-154 RECORDS MANAGEMENT ...major systems of filing classification: alphabetic, numeric, geographic and subject; retention and disposition of records; records equipment and technology.

10-106-157 OFFICE POLITICS ...develop understanding of ethical and unethical political tactics on the job. Through discussion of media, role-playing, and case studies, students will be exposed to ideas for practicing ethical workplace politics.

10-106-172 TELEPHONE/MESSAGING SKILLS ...using the telephone effectively and efficiently in the world of work; telephone etiquette, messaging, and voice mail.

10-106-199 ADMINISTRATIVE PROFESSIONAL CAREER EXPERIENCE...hands-on experience applying skills developed in the program at an approved employment site with employer supervision and discussion with the instructor. Course should be taken during the last semester. (Prerequisites: 10-106-127, Administrative Business Procedures 1; 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

Advanced Emergency Medical Technician
Program Code 305316 | Technical Diploma

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description
Advanced Emergency Medical Technician students are Wisconsin licensed EMTs seeking to upgrade their skills to the Advanced Emergency Medical Technician level. An Advanced EMT performs advanced pre-hospital patient care for the ill and injured on board a licensed Advanced Emergency Medical Technician level ambulance service. These skills are performed and compliant with the Wisconsin scope of practice.

Program Outcomes
- Apply the preparatory aspects of Advanced Emergency Medical Technician care.
- Perform intravenous therapy.
- Perform clinical skill competencies.
- Demonstrate usage of basic pharmacological principles.
- Manage cardiac, diabetic and narcotic overdose cases using medications.

Requirements for Program Entry
- Must be 18 years or older to enter training.
- Valid Wisconsin EMT license.
- Students are required to maintain a current American Heart Association (AHA) Healthcare Provider CPR certification to comply with affiliating agency requirements.
- Proof of current health status and immunizations.
- NWTC is required to comply with the Wisconsin Caregiver Law.
- Aptitudes required for work of this nature are good physical stamina, endurance, and body condition that would not be adversely affected by frequently having to walk, stand, life, carry, and balance at times, in excess of 125 pounds.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate with an Advanced Emergency Medical Technician Technical Diploma will have the potential for employment as an Advanced EMT with a Wisconsin ambulance service licensed to provide Advanced Emergency Medical Technician level care. Ambulance services in Wisconsin are volunteer, private, fire based or hospital based.

Curriculum
Students following the study plan below will complete the Advanced Emergency Medical Technician technical diploma in the number of semesters shown.

FIRST SEMESTER	CREDITS
*30-531-303 Advanced EMT	4
SEMESTER TOTAL	4
TOTAL CREDITS	4

CURRICULUM NOTE
- No final grade lower than a "C" is acceptable. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.
- Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed only after successful completion of the licensing examination and application for a state license.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-531-303 ADVANCED EMT... preparatory aspects, clinical decision-making, basic pharmacology, intravenous therapy, cardiovascular cases, diabetic, narcotic overdose, pediatrics, terrorism response and clinical skill competencies of Advanced EMT level care. (Prerequisite: 10-531-102, EMT and acceptance into AEMT program)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Careers in architectural technology allow you to pursue your passion for designing, drawing, creating, sustainability, and problem solving. As an Architectural Technology graduate, you'll be prepared to work in many fields related to architecture and construction. These careers include architectural technician, building information modeling specialist, building materials salesperson, building systems design technician, shop drawing draftsperson, structural draftsperson, and residential designer or estimator. With additional education and/or work experience, you may become an architect, building inspector senior draftsperson, commercial or industrial estimator, structural engineer, specification writer, or project manager.

Program Outcomes

- Develop architectural drawings for commercial buildings using steel, concrete and masonry.
- Develop residential drawings to meet code and client criteria.
- Perform technical calculations and produce drawings for mechanical, electrical and plumbing systems.
- Produce structural drawings and details for residential and commercial buildings.
- Explain the design and construction process.
- Speak and write effectively about architectural facts and ideas.
- Communicate architectural ideas graphically utilizing sketching techniques.
- Display a positive attitude toward the profession.
- Apply mathematical principles, codes, manufacturers' standards, tables, and technical manuals in the design and production of construction documents.
- Evaluate structural elements using the principles of statics and the strength of materials.
- Choose appropriate materials for use in building construction.
- Estimate materials required for construction.
- Operate computer based technologies currently used to prepare basic presentation drawings, and construction documents.

- Apply sustainable principles to building construction.
- Explain how loads are distributed and transferred through the structure of a building.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Reading Comprehension: 55; Sentence Skills: 75; Elementary Algebra: 61. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Proficiency with Word, Excel, PowerPoint, Windows and the Internet.

Employment Potential

Building information modeling specialist: coordinates development of virtual building information models that integrate architectural, structural, and building systems to be used for construction coordination.

Building Materials Sales Person: works in retail sales of building products in a building materials center.

Building Systems Technician: works under the direction and supervision of an architect or professional engineer, preparing working drawings for hvacr, electrical and plumbing systems within a building.

Shop Drawing Draftsperson: works under the supervision of a professional engineer, developing fabrication and erection drawings for components used in construction.

Structural Draftsperson: works under the direction and supervision of an architect or professional engineer, preparing working drawings for steel, concrete, and wood building systems.

Residential Designer: works independently designing and drafting homes for building materials centers or residential contractors.

Curriculum

Students following the study plan below will complete the Architectural Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-614-210	Arch Principles	4
10-614-211	Arch Revit Intro	1
10-614-213	Bldg Materials	2
10-614-214	Building Green Introduction	1
10-614-222	Arch CAD Intro	2
*10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
**10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-614-215	Architecture Internship	1
10-614-231	Arch Revit Advanced	2
10-614-232	Structural Residential	2
10-614-240	Arch Residential	5
10-804-196	Trigonometry w Apps	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

THIRD SEMESTER		
10-614-250	Arch Commercial Studio I	4
10-614-252	Structural Analysis I	2
10-614-253	Struct Commercial	3
10-801-197	Technical Reporting	3
10-804-195	College Algebra w Apps	3
SEMESTER TOTAL		15

FOURTH SEMESTER		
10-614-251	Bldg Estimating	2
10-614-271	Struct Analysis II	3
10-614-272	Bldg MEP Systems	3
10-614-280	Arch Commercial Studio II	5
10-809-172	Intro to Diversity Studies	3
	Elective	1
SEMESTER TOTAL		17
TOTAL CREDITS		66

CURRICULUM NOTE

* Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES

Land Survey/Site Development, 10-607-106
Revit MEP, 10-614-295
Archi Construction Experience, 10-614-148

With additional education and/or work experience, graduates may find other opportunities for employment.

- Architect
- Building Inspector
- Senior Draftsperson
- Commercial or Industrial Estimator
- Structural Engineer
- Specification Writer
- Project Manager

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-614-210 ARCHITECTURAL PRINCIPLES ...establishes a background in graphic communication and the field of architecture. Creation, interpretation, and effective use of construction documents and specifications will be examined. Basic architectural sketches and drawings will be prepared.

10-614-211 ARCHITECTURAL REVIT INTRO ...introduces the parametric design software Autodesk Revit used for building information modeling. Basic design and documentation tools will be employed. A simple building design will be modeled that matches given specifications.

10-614-213 BUILDING MATERIALS ...considers material properties, processes of manufacture, installation procedures and performance. Construction methods, building systems and products will be evaluated. Materials will be analyzed and classified based on the Construction Specifications Institute Master Format.

10-614-214 Building Green Introduction... summarizes the history, technology and science underlying sustainable building practices. The human factor and the economics of sustainability will be discussed. Alternative energy including wind, solar, photovoltaic, geothermal and fuel cells will be researched.

10-614-215 ARCHITECTURE INTERNSHIP ...the application of theory, skills, and techniques in the architecture profession.

10-614-222 ARCHITECTURAL CAD INTRO ...incorporates the use of AutoCAD for generating construction drawings. Basic to intermediate techniques will be employed. Accurate architectural drawings adhering to given standards that incorporate symbols, dimensions and notes will be created.

10-614-231 ARCHITECTURAL REVIT ADVANCED ...expands the implementation of additional features found in the parametric design software Autodesk Revit. Advanced modeling and documentation tools will be explored. More complex building information models will be generated, edited and documented. (Prerequisite: 10-614-211, Arch Revit Intro)

10-614-232 STRUCTURAL RESIDENTIAL ...highlights load distribution and coordination of structural components within residential buildings. Foundation systems, framing design and applicable codes will be examined. Various methods will be utilized to select members for use in structural drawings. (Prerequisites: 10-614-210, Arch Principles; 10-614-213, Bldg Materials; 10-614-222, Arch CAD Intro; Corequisites: 10-614-231)

10-614-240 ARCHITECTURAL RESIDENTIAL ...emphasizes residential house styles, building codes, and design components related to the site and structure. Conceptual design drawings will be developed into construction drawings using 2D CAD and 3D BIM design software. (Prerequisites: 10-614-210, Arch Principles; 10-614-211, Arch Revit Intro; 10-614-213, Bldg Materials; Struct Residential; 10-614-222, Arch CAD Intro; Corequisites: 10-614-231, Arch Revit Adv; 10-614-232, Struct Residential)

10-614-250 ARCHI COMMERCIAL STUDIO I ...outlines working drawing documentation and the construction process of commercial projects. Advanced building information modeling tools will be applied to a steel frame and masonry structure. Plans, elevations, sections and details will be generated. (Prerequisites: 10-614-240, Arch Residential; 10-614-231, Arch Revit Adv; Corequisite: 10-614-253, Struct Commercial)

10-614-251 BUILDING ESTIMATING ...applies mathematics and the knowledge of building materials to the art of blueprint interpretation. Residential and commercial construction plans will be referenced. Manual and computerized methods will be employed to complete material quantity surveys. (Prerequisites: 10-614-240, Arch Residential; 10-614-232, Struct Residential)

10-614-252 STRUCTURE ANALYSIS I...relates fundamental concepts of physics to architectural design and building construction. Critical thinking will be necessary to perform various calculations. Physical properties of building materials and systems will be analyzed through demonstrations and experiments. (Prerequisites: 10-614-232, Struct Residential; 10-804-196, Trigonometry w Apps)

10-614-253 STRUCTURAL COMMERCIAL ...interprets information necessary to communicate the structural design of commercial buildings. Concrete, masonry and steel structural systems will be compared. Engineering sketches, industry manuals and computers will be utilized to prepare required details. (Prerequisites: 10-614-240, Arch Residential; 10-614-232, Struct Residential; 10-614-231, Arch Rev Adv)

10-614-271 STRUCTURAL ANALYSIS II ...explains mathematical interaction between statics and strength of materials. Principles of structural theory will be applied to beam and column design. Basic calculations will be performed to relate concepts to actual wood member conditions. (Prerequisites: 10-804-195, College Algebra w Apps; 10-614-252, Struct Analysis I)

10-614-272 BUILDING MEP SYSTEMS ...correlates the relationship between a building and its mechanical, electrical and plumbing systems. Codes, space requirements and specifications will be related to the building. MEP plans and necessary calculations will be prepared for a building. (Prerequisites: 10-614-222, Arch CAD Intro; 10-614-240, Arch Residential; 10-614-231, Arch Revit Adv)

10-614-280 ARCH COMMERCIAL STUDIO II ...cultivates skills necessary to solve design problems associated with concrete structures. Current codes, accessibility standards, and sustainability guidelines will be stressed. Various construction documents will be coordinated within a building information model. (Prerequisites: 10-614-250, Arch Commerial Studio I; 10-614-253, Struct Commercial)

Auto Collision Repair & Refinishing Technician
Program Code 324051 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
The Auto Collision Repair and
Refinishing Technician two-year
program prepares learners to repair
and refinish damaged bodies and parts
of automobiles and light trucks.

Program Outcomes
• Straighten damaged autobody sheetmetal.
• Repair plastic and composite body parts.
• Refinish automobile body parts.
• Repair and replace stationary glass.
• Repair damaged automobile
and light truck frames.
• Repair unibody structural damage.
• Estimate collision damage repair costs.
• Demonstrate auto collision
welding procedures.
• Repair manual and passive
restraint systems.
• Diagnose problems in automotive
electrical, electronic, and
mechanical systems.
• Repair steering and suspension systems.
• Qualify for Automotive Service Excellence
Autobody and Paint Certification Exam.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent.
(For a list of equivalents, go to
www.nwtc.edu/gettingstarted.)
• High school background in mathematics,
science, and technology education.
• As a requirement for program entry, an
Academic Skills Assessment (Accuplacer)
with appropriate benchmark scores is
necessary. Program Benchmarks are
Arithmetic: 65, Reading Comprehension:
55; Sentence Skills: 60. Students not
meeting these benchmarks or the
equivalent will be required to establish
an individualized academic plan.
Students may have the opportunity to
enroll in selected program core courses
while completing their individualized
plan. Upon completion of the plan,
students will be eligible for all program
courses. However, higher test scores will
lead to greater success in core program
courses. To learn more about these

assessments and program benchmark
scores, please contact a counselor
(920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will
have the potential for employment
in the following areas:

Auto Collision Repair Technician: Repairs
damaged bodies of cars and light trucks;
removes damaged panels and welds in new
ones; removes and replaces accessories, glass,
electrical parts, and interior trim; repairs
or replaces plastic or composite parts; and
straightens dents in sheet metal panels to
restore the vehicle to pre-accident condition.

Auto Collision Refinishing Technician:
Completes the refinishing phase of all
repairs on cars, trucks, and fleet vehicles;
does all stages of priming, sanding and
sealing prior to the paint application;
determines the type and color of paint
to do the refinishing; is familiar with
mixing, tinting, and shading; as well as
the application of color for matching;
and buffs, polishes, stripes, and details
vehicle to complete the repair job.

Structural Repair Technician: Repairs
unitized and full-frame vehicles by
analyzing, measuring, and pulling the
structure to the proper dimensions
and replaces structural parts that are
not repairable using proper structural
part replacement techniques to return
the vehicle to factory specifications.

Collision Mechanical Technician: Removes,
re-installs, repairs and replaces heating
and cooling brake, fuel, drivetrain, and
steering and suspension components
relative to collision damage; diagnose
and correct vehicle wheel alignment.

Trim and Glass Installer: Removes,
replaces, or repairs all types of glass or
glass-related problems on vehicles.

Accreditation
• NATEF (National Automotive Technicians
Education Foundation) Certified Program
• I-CAR Automotive Steel GMA
(MIG) Welding Qualification
Test Administrators.
• I-CAR Industry Training Alliance Member
• National Glass Association (NGA)
continuing education provider.

Credentials
All NWTC Auto Collision programs
are ASE Certified to NATEF (National
Automotive Technicians Education

Curriculum
Students following the study plan below
will complete the Auto Collision Repair &
Refinishing Technician technical diploma
in the number of semesters shown.

AUTO COLLISION REFINISHING FIRST SERIES
10-405-101	Intro to Auto Refinishing	2
10-405-106	Plastics & Composites	1
10-405-107	Coll Refinish Surface Prep	2
10-405-108	Collision Refinish Topcoat App	3
10-804-107	College Mathematics	3
*10-890-101	College 101	1
31-801-386	Communicating Effectively	1
TOTAL CREDITS		**13**

AUTO COLLISION REFINISHING SECOND SERIES
10-405-109	Refinishing Tinting & Blending	2
10-405-110	Collision Refinishing-Advanced	3
10-405-147	Auto Refinish Prod Emmissions	1
10-405-148	Auto Refinish Custom	1
10-809-166	Intro to Ethics: Theory & App	3
10-809-197	Contemporary Amer Society	3
31-801-385	Communicating-Writing	1
TOTAL CREDITS		**14**

AUTO COLLISION REPAIR FIRST SERIES
10-405-100	Intro to Collision Repair	2
10-405-102	Collision Repair Non Struct 1	2
10-405-103	Collision Repair Non Struct 2	2
10-405-104	Collision Repair Non Struct 3	2
10-405-105	Collision Repair Non Struct 4	2
10-405-114	Collision Repair Estimating	1
10-405-120	Collision Repair Mech - HVAC	2
10-405-128	Collision Repair Elec Sys-SRS	1
10-405-144	Collision Repair Welding 1	2
10-602-125	Electrical&Electronic Systems 1	2
TOTAL CREDITS		**18**

AUTO COLLISION REPAIR SECOND SERIES
10-405-111	Collision Repair Structural 1	3
10-405-112	Collision Repair Structural 2	3
10-405-113	Collision Repair Structural 3	3
10-405-122	Collision-Drive Systems	2
10-405-146	Collision Repair Welding 2	2
10-602-124	Steering & Suspension Systems	3
TOTAL CREDITS		**15**

CURRICULUM NOTE
*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

Foundation) Standards. Additionally, all
instructional staff in the NWTC Auto
Collision Programs are at a minimum,
Master, ASE Certified Technicians.

Associations
• National Institute for Automotive
Service Excellence
• Wisconsin Auto Collision
Technicians Association
• Bay Auto Body Association
• National Auto Body Congress
• Collision Repair Instructors Network

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

**10-405-100 INTRODUCTION TO
COLLISION REPAIR** ...industry
professionalism, career opportunities
and certifications, personal and shop
safety, collision repair industry terms and
definitions, sheet metal characteristics
and analysis, use of basic hand and power
tools, identifying and using collision repair
information and procedures, and basic repair
procedures for minor collision damage.

**10-405-101 INTRODUCTION TO
AUTOMOTIVE REFINISHING**
...industry career opportunities and
certifications, refinishing safety and
environmental regulations, automotive
paints, and paint application equipment.

**10-405-102 COLLISION REPAIR NON
STRUCTURAL 1** ...removal, replacement,
and storage of interior and exterior trim,
disarming/arming restraint systems,
adjustment to movable glass, lamps, bumpers
and movable tops, and wind noise/water
leak diagnosis and repair. (Prerequisite:
10-405-100 Intro to Collision Repair)

**10-405-103 COLLISION REPAIR
NON STRUCTURAL 2** ...identifying
different types of vehicle construction,
nonstructural part identification, damage
analysis and developing a repair plan, time
management, and replacing and aligning
bolted and moveable exterior panels utilizing
the appropriate tools. (Corequisites: 10-
405-100 Intro to Collision Repair; 10-
405-102 Coll Repair Non Structural 1)

**10-405-104 COLLISION REPAIR NON
STRUCTURAL 3** ...repair sequences and
processes for straightening more complex
types of collision damage to nonstructural
vehicle panels utilizing the appropriate
tools. (Corequisites: 10-405-100 Intro
to Collision Repair; 10-405-102, Coll
Repair Non Structural 1; 10-405-103,
Collision Repair Non Structural 2)

**10-405-105 COLLISION REPAIR NON
STRUCTURAL 4** ...removal and application
of sealers, undercoats, corrosion protection
and various types of foams, replacing non
structural vehicle panels using panel bonding
and welding, and repairing aluminum
exterior panels. (Corequisites: 10-405-100,
Intro to Collision Repair; 10-405-102,
Collision Repair Non Struct 1; 10-405-103
Collision Repair Non Struct 2; 10-405-
104, Collision Repair Non Struct 3)

**10-405-106 PLASTICS AND
COMPOSITES** ...identifying types of
plastic used on vehicles, making repair or
replace decisions, repair techniques using
plastic welding equipment and adhesives,
and refinishing techniques and materials.

**10-405-107 COLLISION REFINISHING
SURFACE PREPARATIONS** ...planning
the refinishing process including substrate
identification, paint and rust removal, panel
cleaning, selecting proper sandpaper, sanding
techniques, vehicle protection, masking
techniques, selecting and applying the
correct undercoats, and corrosion protection
products and usage. (Corequisite: 10-405-
101 Introduction to Automotive Refinishing)

**10-405-108 COLLISION REFINISHING
TOPCOAT APPLICATION** ...locating and
mixing automotive color formulas, applying
sealers, single-stage, and basecoat/clearcoat
finishes, optimizing transfer efficiency, and
blending adjacent vehicle panels. (Corequisites:
10-405-101, Intro to Auto Refinishing;
10-405-107, Coll Refinish Surface Prep)

**10-405-109 REFINISHING TINTING
AND BLENDING** ...advanced spray gun
setup considerations & techniques, using
blending additives. Also included is an in-
depth study of color theory, color movement,
color evaluation, and color adjustment tools
and techniques. (Prerequisites: 10-405-
101, Intro to Auto Refinishing; 10-405-
107, Coll Refinish Surface Prep; 10-405-
108, Collision Refinish Topcoat App)

**10-405-110 COLLISION REFINISHING
- ADVANCED** ...application and blending
of automotive multistage finishes, and
use of waterborne refinishing materials.
Refinishing defect identification, diagnosis,
and repair is also covered with emphasis
placed on learning how to avoid defects
while refinishing. (Prerequisites: 10-405-101,
Intro to Auto Refinishing; 10-405-107, Coll
Refinish Surface Prep; 10-405-108, Coll
Refinish Topcoat Appl; Corequisite: 10-
405-109, Refinishing Tinting & Blending)

**10-405-111 COLLISION REPAIR
STRUCTURAL 1** ...understanding collision
forces, performing inspections of automotive
structural components, and determine the
extent of structural damage using measuring
equipment. (Prerequisites: 10-405-100,
Intro to Collision Repair; 10-405-102,
Collision Repair Non Struct 1; 10-405-103
Collision Repair Non Struct 2; 10-405-
104, Collision Repair Non Struct 3; 10-
405-105, Collision Repair Non Struct 4)

**10-405-112 COLLISION REPAIR
STRUCTURAL 2** ...utilizing anchoring
and pulling equipment for straightening,
realigning, replacing and sectioning unibody
structural components, sections, and other
vehicle outer panels. Additionally students
will utilize power and hand tools for cutting,
welding, stress relieving, replacing corrosion
protection, and stationary glass replacement.
(Prerequisites: Completion of Auto Collision
Repair First Series courses; Corequisites:
10-405-146, Collision Repair Welding 2;
10-405-111, Collision Repair Structural 1)

**10-405-113 COLLISION REPAIR
STRUCTURAL 3** ...utilizing, anchoring
and pulling equipment for straightening,
realigning, replacing and sectioning full-
frame structural components. Additionally
students will utilize power and hand
tools for cutting, welding, stress relieving,
corrosion protection, and stationary glass
replacement. (Prerequisites: Completion
of 1st semester courses; Corequisite: 10-
405-146 Collision Repair Welding 2;
10-405-111 Collision Repair Structural
1; 10-405-112 Coll Repair Structural 2)

**10-405-114 COLLISION REPAIR
ESTIMATING** ...vehicle construction, model
identification, damage analysis, parts sources,
handwritten damage reports, computerized
damage reports, and shop management.

**10-405-120 COLLISION REPAIR
MECHANICAL HVAC** ...locating,
identifying, inspecting, testing and
repairing or replacing both heating and
cooling system components. Students
also diagnose both heating and cooling
systems for leaks, belt and pulley alignment
and safely identify, label, store, evacuate,
recharge, replace and recycle coolants
and refrigerants in accordance with EPA
regulations (Prerequisite: Accepted into
Auto Collision Repair & Refinishing
Technology and/or Auto Collision Repair
& Refinishing Technician program)

**10-405-122 COLLISION REPAIR
BRAKES, DRIVE TRAIN AND FUEL**
...locating, identifying, inspecting,
diagnosing, repairing or replacing
collision damaged brake system,
drive train, fuel, and emission system
components (Prerequisite: Accepted into
Auto Collision Repair & Refinishing
Technology and/or Auto Collision Repair
& Refinishing Technician program)

**10-405-128 COLLISION REPAIR
ELECTRICAL SYSTEMS SRS** ...operation,
troubleshooting, diagnosis, and repair
of restraint and supplemental restraint
systems. (Corequisite: 10-602-125,
Electrical and Electronic Systems)

**10-405-144 COLLISION REPAIR
WELDING 1** ...welding safety;
introduction to the GMAW (MIG)
welding process and equipment; and
skills training in GMAW (MIG) welding
on light gauge automotive steels.

**10-405-146 COLLISION REPAIR
WELDING 2** ...oxy acetylene and plasma
arc cutting, GMAW (MIG) welding
on structural grade automotive steels.
Squeeze type resistance spot welding
(STRSW), welding aluminum, and
silicone bronze is also introduced to
students in this course. (Prerequisite: 10-
405-144 Collision Repair Welding 1)

**10-405-147 AUTO REFINISHING,
PRODUCTIVITY & EMISSIONS**
...confined damage repair techniques,
improving cycle time during refinishing, EPA
requirements for refinishing technicians,
and reducing VOC emissions during the
refinishing process. (Corequisites: 10-
405-109 Coll Refinish Tint and Blend;
10-405-110 Coll Refinishing Advanced)

**10-405-148 AUTO REFINISHING,
CUSTOM FINISHES & GRAPHICS**
...this course provides the opportunity
for the learner to develop the knowledge
skills process and understanding of using
airbrushes, mixing and applying specialty
refinish coatings such as candies, flakes, and
marbilizers, custom design techniques, and
application of adhesive style striping and
graphics. An introduction to applying painted
pinstripes will also be included. (Corequisites:
10-405-109 Coll Refinish Tint and Blend;
10-405-110 Coll Refinishing Advanced;
10-405-147 Auto Refinish Prod Emissions)

**10-602-124 STEERING AND
SUSPENSION SYSTEMS** ...developing
the skills needed to diagnose, service and
repair steering and suspension systems
including wheel alignment procedures.
(Corequisite: 10-602-107, Automotive
Service Fundamentals or 10-405-100,
Introduction to Collision Repair)

**10-602-125 ELECTRICAL AND
ELECTRONIC SYSTEMS 1**...develop
the skills needed to diagnose, service and
repair electrical and electronic systems.
Learners apply Ohm's Law to basic electrical
circuit diagnosis. (Prerequisites: Accepted
into the Automotive Technology and/
or Automotive Technician program;
Corequisite: 10-602-107, Automotive
Service Fundamentals or 10-405-100,
Introduction to Collision Repair)

Auto Collision Repair & Refinishing Technology

Program Code 104051 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

This two-year program provides all the required technical training that the technical diploma offers. It also provides the student with the opportunity to pursue a supervisory or management career, to pursue an automotive industry related career, and to transfer credit to a four-year college.

Program Outcomes

- Straighten damaged autobody sheetmetal.
- Repair plastic and composite body parts.
- Repair and replace stationary glass.
- Repair damaged automobile and light truck frames.
- Refinish automobile body parts.
- Explore custom painting.
- Repair unibody structural damage.
- Estimate collision damage repair costs.
- Demonstrate Auto Collision welding procedures.
- Repair manual and passive restraint systems.
- Diagnose problems in automotive electrical, electronic, and mechanical systems.
- Repair steering and suspension systems.
- Qualify for Automotive Service Excellence Autobody and Paint Certification Exam.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and technology education.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized

plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

Along with technical diploma employment opportunities, a graduate of this program will have the potential for employment in the following areas also:

Insurance Adjuster/Appraiser: Works closely with collision repair facilities to negotiate repair procedures and repair costs.

Collision Center Owner: Owns and operates their own collision repair facility. May have several employees working for them.

Collision Center Manager: Oversees all aspects of the collision center operation; including writing estimates, working with insurance companies, and managing employees.

Manufacturers Representative: Represents various manufacturers of paint and body supplies in either sales or as a technical representative.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Tech-Ed Teacher
- Collision Repair and Refinishing Instructor
- Automotive Engineer
- Insurance Adjuster or Appraiser

Accreditation

- NATEF (National Automotive Technicians Education Foundation) Certified Program
- I-CAR Automotive Steel GMA (MIG) Welding Qualification Test Administrators.
- I-CAR Industry Training Alliance Member
- National Glass Association (NGA) continuing education provider.

Associations

- National Institute for Automotive Service Excellence
- Wisconsin Auto Collision Technicians Association
- Bay Auto Body Association
- National Auto Body Congress
- Collision Repair Instructors Network

Curriculum

Students following the study plan below will complete the Auto Collision Repair & Refinishing Technology associate degree in the number of semesters shown.

AUTO COLLISION REFINISHING FIRST SERIES

10-405-101	Intro to Auto Refinishing	2
10-405-106	Plastics & Composites	2
10-405-107	Coll Refinish Surface Prep	2
10-405-108	Collision Refinish Topcoat App	3
*10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
10-809-197	Contemporary Amer Society	3
**10-890-101	College 101	1
TOTAL CREDITS		**18**

AUTO COLLISION REFINISHING SECOND SERIES

10-405-109	Refinishing Tinting & Blending	2
10-405-110	Collision Refinishing-Advanced	3
10-405-147	Auto Refinish Prod Emmissions	1
10-405-148	Auto Refinish Custom	1
10-405-149	Auto Coll, Business Practice	1
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
TOTAL CREDITS		**17**

AUTO COLLISION REPAIR FIRST SERIES

10-405-100	Intro to Collision Repair	2
10-405-102	Collision Repair Non Struct 1	2
10-405-103	Collision Repair Non Struct 2	2
10-405-104	Collision Repair Non Struct 3	2
10-405-105	Collision Repair Non Struct 4	2
10-405-114	Collision Repair Estimating	1
10-405-120	Collision Repair Mech - HVAC	2
10-405-128	Collision Repair Elec Sys-SRS	1
10-405-144	Collision Repair Welding 1	2
10-602-125	Electrical & Electronic Systems 1	2
TOTAL CREDITS		**18**

AUTO COLLISION REPAIR SECOND SERIES

10-405-111	Collision Repair Structural 1	3
10-405-112	Collision Repair Structural 2	3
10-405-113	Collision Repair Structural 3	2
10-405-122	Collision-Drive Systems	2
10-405-146	Collision Repair Welding 2	2
10-602-124	Steering & Suspension Systems	3
10-809-199	Psychology Of Human Relations	3
TOTAL CREDITS		**18**

CURRICULUM NOTE
* Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Credentials

All NWTC Auto Collision programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Auto Collision Programs are, at a minimum, Master, ASE Certified Technicians.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-405-100 INTRODUCTION TO COLLISION REPAIR ...industry professionalism, career opportunities and certifications, personal and shop safety, collision repair industry terms and definitions, sheet metal characteristics and analysis, use of basic hand and power tools, identifying and using collision repair information and procedures, and basic repair procedures for minor collision damage.

10-405-101 INTRODUCTION TO AUTOMOTIVE REFINISHING ...industry career opportunities and certifications, refinishing safety and environmental regulations, automotive paints, and paint application equipment.

10-405-102 COLLISION REPAIR NON STRUCTURAL 1 ...removal, replacement, and storage of interior and exterior trim, disarming/arming restraint systems, adjustment to movable glass, lamps, bumpers and movable tops, and wind noise/water leak diagnosis and repair. (Prerequisite: 10-405-100 Intro to Collision Repair)

10-405-103 COLLISION REPAIR NON STRUCTURAL 2 ...identifying different types of vehicle construction, nonstructural part identification, damage analysis and developing a repair plan, time management, and replacing and aligning bolted and moveable exterior panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102 Coll Repair Non Structural 1)

10-405-104 COLLISION REPAIR NON STRUCTURAL 3 ...repair sequences and processes for straightening more complex types of collision damage to nonstructural vehicle panels utilizing the appropriate tools. (Corequisites: 10-405-100 Intro to Collision Repair; 10-405-102, Coll Repair Non Structural 1; 10-405-103, Collision Repair Non Structural 2)

10-405-105 COLLISION REPAIR NON STRUCTURAL 4 ...removal and application of sealers, undercoats, corrosion protection and various types of foams, replacing non structural vehicle panels using panel bonding and welding, and repairing aluminum exterior panels. (Corequisites: 10-405-100, Intro to Collision Repair; 10-405-102, Collision Repair Non Struct 1; 10-405-103 Collision Repair Non Struct 2; 10-405-104, Collision Repair Non Struct 3)

10-405-106 PLASTICS AND COMPOSITES ...identifying types of plastic used on vehicles, making repair or replace decisions, repair techniques using plastic welding equipment and adhesives, and refinishing techniques and materials.

10-405-107 COLLISION REFINISHING SURFACE PREPARATIONS ...planning the refinishing process including substrate identification, paint and rust removal, panel cleaning, selecting proper sandpaper, sanding techniques, vehicle protection, masking techniques, selecting and applying the correct undercoats, and corrosion protection products and usage. (Corequisite: 10-405-101 Introduction to Automotive Refinishing)

10-405-108 COLLISION REFINISHING TOPCOAT APPLICATION ...locating and mixing automotive color formulas, applying sealers, single-stage, and basecoat/clearcoat finishes, optimizing transfer efficiency, and blending adjacent vehicle panels. (Corequisites: 10-405-101, Intro to Auto Refinishing; 10-405-107, Coll Refinish Surface Prep)

10-405-109 REFINISHING TINTING AND BLENDING ...advanced spray gun setup considerations & techniques, using blending additives. Also included is an in-depth study of color theory, color movement, color evaluation, and color adjustment tools and techniques. (Prerequisites: 10-405-101, Intro to Auto Refinishing; 10-405-107, Coll Refinish Surface Prep; 10-405-108, Collision Refinish Topcoat App)

10-405-110 COLLISION REFINISHING - ADVANCED ...application and blending of automotive multistage finishes, and use of waterborne refinishing materials. Refinishing defect identification, diagnosis, and repair is also covered with emphasis placed on learning how to avoid defects while refinishing. (Prerequisites: 10-405-101, Intro to Auto Refinishing; 10-405-107, Coll Refinish Surface Prep; 10-405-108, Coll Refinish Topcoat Appl; Corequisite: 10-405-109, Refinishing Tinting & Blending)

10-405-111 COLLISION REPAIR STRUCTURAL 1 ...understanding collision forces, performing inspections of automotive structural components, and determine the extent of structural damage using measuring equipment. (Prerequisites: 10-405-100, Intro to Collision Repair; 10-405-102, Collision Repair Non Struct 1; 10-405-103 Collision Repair Non Struct 2; 10-405-104, Collision Repair Non Struct 3; 10-405-105, Collision Repair Non Struct 4)

10-405-112 COLLISION REPAIR STRUCTURAL 2 ...utilizing anchoring and pulling equipment for straightening, realigning, replacing and sectioning unibody structural components, sections, and other vehicle outer panels. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, replacing corrosion protection, and stationary glass replacement. (Prerequisites: Completion of Auto Collision Repair First Series courses; Corequisites: 10-405-146, Collision Repair Welding 2; 10-405-111, Collision Repair Structural 1)

10-405-113 COLLISION REPAIR STRUCTURAL 3 ...utilizing, anchoring and pulling equipment for straightening, realigning, replacing and sectioning full-frame structural components. Additionally students will utilize power and hand tools for cutting, welding, stress relieving, corrosion protection, and stationary glass replacement. (Prerequisites: Completion of 1st semester courses; Corequisite: 10-405-146 Collision Repair Welding 2; 10-405-111 Collision Repair Structural 1; 10-405-112 Coll Repair Structural 2)

10-405-114 COLLISION REPAIR ESTIMATING ...vehicle construction, model identification, damage analysis, parts sources, handwritten damage reports, computerized damage reports, and shop management.

10-405-120 COLLISION REPAIR MECHANICAL HVAC ...locating, identifying, inspecting, testing and repairing or replacing both heating and cooling system components. Students also diagnose both heating and cooling systems for leaks, belt and pulley alignment and safely identify, label, store, evacuate, recharge, replace and recycle coolants and refrigerants in accordance with EPA regulations (Prerequisite: Accepted into Auto Collision Repair & Refinishing Technology and/or Auto Collision Repair & Refinishing Technician program)

10-405-122 COLLISION REPAIR BRAKES, DRIVE TRAIN AND FUEL ...locating, identifying, inspecting, diagnosing, repairing or replacing collision damaged brake system, drive train, fuel, and emission system components (Prerequisite: Accepted into Auto Collision Repair & Refinishing Technology and/or Auto Collision Repair & Refinishing Technician program)

10-405-128 COLLISION REPAIR ELECTRICAL SYSTEMS SRS ...operation, troubleshooting, diagnosis, and repair of restraint and supplemental restraint systems. (Corequisite: 10-602-125, Electrical & Electronic Systems)

10-405-144 COLLISION REPAIR WELDING 1 ...welding safety; introduction to the GMAW (MIG) welding process and equipment; and skills training in GMAW (MIG) welding on light gauge automotive steels.

10-405-146 COLLISION REPAIR WELDING 2 ...oxy acetylene and plasma arc cutting, GMAW (MIG) welding on structural grade automotive steels. Squeeze type resistance spot welding (STRSW), welding aluminum, and silicone bronze is also introduced to students in this course. (Prerequisite: 10-405-144 Collision Repair Welding 1)

10-405-147 AUTO REFINISHING, PRODUCTIVITY & EMISSIONS ...confined damage repair techniques, improving cycle time during refinishing, EPA requirements for refinishing technicians, and reducing VOC emissions during the refinishing process. (Corequisites: 10-405-109 Coll Refinish Tint and Blend; 10-405-110 Coll Refinishing Advanced)

10-405-148 AUTO REFINISHING, CUSTOM FINISHES & GRAPHICS ...this course provides the opportunity for the learner to develop the knowledge skills process and understanding of using airbrushes, mixing and applying specialty refinish coatings such as candies, flakes, and marbilizers, custom design techniques, and application of adhesive style striping and graphics. An introduction to applying painted pinstripes will also be included. (Corequisites: 10-405-109 Coll Refinish Tint and Blend; 10-405-110 Coll Refinishing Advanced; 10-405-147 Auto Refinish Prod Emissions)

10-405-149 AUTO COLLISION, BUSINESS PRACTICE/ ENTREPRENEURSHIP ...collision repair facility operations from a business standpoint, including office management, record keeping, business ethics, and cycle time efficiency are discussed. How to plan for opening a collision repair facility is also introduced.

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS 1 ...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Prerequisites: Accepted into the Automotive Technology or Auto Collision Repair and Refinishing Technology/Technician program; Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

Automation Engineering Technology
Program Code 106641 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
The Automation Engineering Technology program responds to industryís need for system-level technicians who can work with integrated machine systems that might involve industrial automation, robotics, mechanics, computers, industrial communications and/or electronics technology. These technicians are in high demand to coordinate the higher end control platforms and networking that support automated mechanical systems.

Program Outcomes
- Understand and apply knowledge of electricity, electronics and motors to industrial applications.
- Read and interpret technical specifications, detail and assembly drawings, schematics, and diagrams for machine control.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Analyze electrical, mechanical, fluid control functions for proper machine programming and operation.
- Apply a variety programming languages to the control of single manufacturing cells, programmable controllers, computer networks, industrial networks and information systems using a dynamic data exchange.
- Construct ladder diagrams, flow charts, timing diagrams, and basic computer control algorithms for machine control.
- Understand and apply computer hardware/software applications to industrial systems.
- Apply diagnostic tools to troubleshoot and resolve system problems.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Reading Comprehension: 80; Sentence Skills: 75; Elementary Algebra: 61. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:
- Controls Designer
- Automation Technician
- Controls Technician
- Engineering Technician
- Controls Engineer in Training
- Automation Engineer in Training

The following certificates/technical diplomas may be applied toward this program:
- 904621, Industrial Maintenance Certificate

Curriculum
Students following the study plan below will complete the Automations Engineering Technology associate degree in the number of semesters shown.

FIRST SEMESTER — CREDITS

Course	Title	Credits
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-140	Machine Wiring and Safety	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
*10-890-101	College 101	1
	Elective	1
SEMESTER TOTAL		**16**

SECOND SEMESTER

Course	Title	Credits
10-660-101	Digital 1: Logic	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
**10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
	Elective	1
SEMESTER TOTAL		**16**

THIRD SEMESTER

Course	Title	Credits
10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-606-109	Automation CAD 1	1
10-606-110	Automation CAD 2	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-664-105	Automation 6: PLC	1
10-664-151	Automation 8: HMI	1
10-664-152	Automation 9: HMI	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-664-170	Safety Devices and Application	1
SEMESTER TOTAL		**14**

FOURTH SEMESTER

Course	Title	Credits
10-620-170	Robotics - Introduction to	1
10-620-172	Robotic Vision Systems	1
10-664-150	Automation 7: PLC	1
10-664-153	Automation 10: Network	1
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-664-189	Automation Systems Integration	3
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**16**
TOTAL CREDITS		**62**

CURRICULUM NOTE
*The credit for 10-890-901, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

** Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

SUGGESTED ELECTIVES
Fluids 3: Inter Hydraulics, 10-620-165
Fluids 4: Adv Hydraulics, 10-620-166
Mechanics 1: Basic, 10-620-121
Mechanics 2: Intermediate, 10-620-122
Mechanics 3: Systems, 10-620-123

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-606-109 AUTOMATION CAD 1 ...computer aided drawing packages specifically focused on the development and modification of electrical schematics utilized for controls of manufacturing equipment.

10-606-110 AUTOMATION CAD 2 ...in-depth investigation of more advanced functions and capabilities of CAD electrical drawing package.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Prerequisite: 10-605-158, Power Electronics 2: Drives)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...single and 3-phase AC Induction motors, specialty motor performance and characteristics, and three-phase power systems.. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of industrial robots.

10-620-172 ROBOTIC VISION SYSTEMS ...setting up user frames, calibrating robot camera, identifying objects with robotic vision systems, creating programs using object identification.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC system, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-150 AUTOMATION 7: PLC ...timers, counters, and math instruction applications, creation of a function block program structure via written specification, and modification of existing PLC program to enhance operation utilizing advanced programming functions. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Corequisite: 10-664-105, Automation 6: PLC)

10-664-152 AUTOMATION 9: HMI ...advanced functions of Operator Interface Terminals, differentiation between Human Machine Interface and Operator Interface Terminal, basic setup, generation of PLC program, tags, and screen objects for Human Machine Interface system. (Corequisite: 10-664-151, Automation 8: HMI)

10-664-153 AUTOMATION 10: NETWORK ...industrial networks used in today's manufacturing environment and their foundation, proper system hardware of an industrial network installation, and use of an industrial network to communicate data via Industrial Ethernet. (Corequisite: 10-664-152, Automation 9: HMI)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisite:10-664-102, Automation 3: PLC OR 10-664-104, Automation 5: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC drive system performance, specification of AC and DC drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Corequisite: 10-664-163, Control 4: Drive Performance)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Corequisite: 10-664-164, Control 5: Servo Systems)

10-664-170 SAFETY DEVICES AND APPLICATIONS ...introduction to the function of commonly used machinery safety devices, wiring of these devices to complete safety circuits, overview of safety system design. (Prerequisites: 10-664-101, Automation 1: Control Logic)

10-664-189 AUTOMATION SYSTEMS INTEGRATION ...coordination and application of automation technologies into an integrated and automated manufacturing system. (Prerequisites:10-620-159, Power Electronics 3:Drives; 10-620-162, Power Electricity 2: Motors; 10-664-152, Automation 9: HMI; 10-664-162, Control 3: Motion Systems; 10-620-101, Fluids 2:Basic Hydraulics)

Automotive Technician
Program Code 324042 | Technical Diploma

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Automotive Technician prepares students for work in an automotive service department. Students learn to repair and service all mechanical parts of the automobile under conditions similar to those in an actual repair facility.

Program Outcomes

• Automotive Technician graduates will demonstrate technical aptitude and proficiency by diagnosis and repair of the following ASE service areas:
• A1 Engine Repair
• A2 Automatic Transmission/Transaxle
• A3 Manual Drive Train & Axle
• A4 Suspension & Steering
• A5 Brakes
• A6 Electric/Electronic Systems
• A7 Heating & A/C
• A8 Engine Performance

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted)
• NWTC Academic Skills Assessment or equivalent (See Academic Skills Assessment section for details and equivalents).
• High school background in mathematics, science, and technology education.
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized

plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Automotive Service Technician: Diagnoses vehicle malfunctions, performs appropriate repairs, and recommends/conducts regular vehicle maintenance.

Automotive Electronics Specialist: Utilizes hi-tech equipment to troubleshoot complex electrical and computer malfunctions. Replaces and reprograms engine, body and transmission controllers.

Brake Specialist: Performs complete brake system safety inspections, diagnoses brake system concerns and makes necessary repairs.

Steering, Suspension & Alignment Specialist: Diagnoses and repairs steering and suspension system concerns, utilizes computerized equipment to perform suspension and steering system adjustments.

Transmission and Drive Train Specialist: Diagnoses and repairs concerns related to automatic and manual transmissions, drive trains and differentials.

Engine Performance Specialist: Utilizes hi-tech equipment to diagnose and repair engine drivability concerns relating to engine mechanical, ignition and fuel systems.

Heating & Air Conditioning Specialist: Diagnoses and repairs heating and air conditioning control systems.

Engine Repair Specialist: Diagnoses engine mechanical failure, disassembles, inspects, and measures engine components, recommends/ conducts component replacement.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Shop Supervisor
• Specialty Technician
• Fleet Dispatcher
• Specialty Repair Shop Owner

Curriculum

Students following the study plan below will complete the Automotive Technician technical diploma in the number of semesters shown.

FIRST SEMESTER / CREDITS

10-602-104	Brake Systems	3
10-602-107	Auto Service Fundamentals	2
10-602-124	Steering & Suspension Systems	3
10-602-125	Electrical&Electronic Systems1	2
10-602-199	Alternative Fuels Technology	1
10-804-107	College Mathematics	3
*10-890-101	College 101	1
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		**16**

SECOND SEMESTER

10-602-103	Engine Repair 1	2
10-602-127	Electrical&Electronic Systems 2	3
10-602-195	Advanced Chassis Systems	2
10-602-197	Engine Performance 1	3
10-602-198	Engine Performance 2	4
31-442-350	Welding-Machine Trades	2
SEMESTER TOTAL		**16**

THIRD SEMESTER

10-602-123	Engine Repair 2	3
10-602-128	Electrical&Electronic Systems 3	3
10-602-196	Climate Control Systems	3
10-602-200	Diesel Fuel Technology	1
10-602-201	Vehicle Computer Controlled Sy	1
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		**14**

FOURTH SEMESTER

10-602-109	Auto Transmission/Transaxle	4
10-602-149	Manual Drive Train and Axles	4
10-602-150	Automotive Certification Prep	1
10-602-202	Advanced Vehicle Man Tech	3
10-602-203	Vehicle Body Mechanical Svc	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**14**
TOTAL CREDITS		**60**

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

• Automotive Instructor

Accreditation

• All NWTC Automotive programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards.
• All instructional staff in the NWTC Automotive Programs are, at a minimum, Master, ASE Certified Technicians.
• NATEF (National Automotive Technicians Education Foundation)

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-602-103 ENGINE REPAIR 1 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on in-vehicle repairs including engine cooling and lubrications. (Prerequisite: 10-602-107 Automotive Service Fundamentals)

10-602-104 BRAKE SYSTEMS ...develop the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.) (Corequisite: 10-602-107 Automotive Service Fundamentals)

10-602-107 AUTOMOTIVE SERVICE FUNDAMENTALS ...safety and the use of basic hand/power tools in accordance with industry standards. Introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services. (Prerequisite: Accepted into the Automotive Technology and/or Automotive Technician program)

10-602-109 AUTOMATIC TRANSMISSION/TRANSAXLE ...develop the skills needed to diagnose, service and repair automatic transmission/transaxles including overhaul procedures. (Prerequisite:10-602-127 Electrical and Electronic Systems 2)

10-602-123 ENGINE REPAIR 2 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on out-of-vehicle engine repair including overhaul procedures. (Prerequisite: 10-602-103 Engine Repair 1.)

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS 1...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Prerequisites: Accepted into the Automotive Technology or Auto Collision Refinishing & Repair Technology/Technician program; Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

10-602-127 ELECTRICAL AND ELECTRONIC SYSTEMS 2 ...develop the skills needed to diagnose, service and repair electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems. (Prerequisite: 10-602-125 Electrical and Electronic Systems 1)

10-602-128 ELECTRICAL AND ELECTRONIC SYSTEMS 3 ...develop the skills needed to diagnose, service and repair electrical and electronic systems including driver information, horn, wiper/washer, power accessories, cruise control, air bag, antitheft and radio systems (Prerequisite: 10-602-127, Electrical&Electronic Systems2)

10-602-149 MANUAL DRIVE TRAIN AND AXLES ...develop the skills needed to diagnose, service and repair clutches, manual transmissions/transaxle, differentials, four wheel drive/all wheel drive, and drive axles. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-150 AUTOMOTIVE CERTIFICATION PREPARATION ...this course provides an opportunity for students to develop the knowledge, skills and understanding required to successfully complete the Automotive Technician certification test. (Prerequisite: Accepted to the Automotive Technician or Automotive Technology program)

10-602-195 ADVANCED CHASSIS SYSTEMS ...develop the skills needed to diagnose, service and repair antilock brake, vehicle stability enhancement, and electronic steering and suspension system. (Prerequisites: 10-602-104 Brake Systems; 10-602-124 Steering and Suspension System; 10-602-125 Electrical and Electronic Syst)

10-602-196 CLIMATE CONTROL SYSTEMS ...develop the skills needed to diagnose, service and repair climate control systems including heating, cooling, and air distribution. (Prerequisite: 10-602-127, Electrical and Electronic Systems 2)

10-602-197 ENGINE PERFORMANCE 1 ...develop the skills needed to diagnose, service and repair powertrain control and ignition systems. Emphasis on diagnostic procedures and the problem-solving techniques associated with automotive engine performance and drivability. (Prerequisite: 10-602-103 Engine Repair 1; Corequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-198 ENGINE PERFORMANCE 2 ...develop the skills needed to diagnose, service and repair fuel and emission control systems. Emphasis on diagnostic procedures, problem-solving techniques associated with automotive engine performance and drivability. (Corequisite: 10-602-197 Engine Performance 1)

10-602-199 ALTERNATIVE FUELS TECHNOLOGY ...develop the knowledge, skills, process, and understanding of Compressed Natural Gas (CNG) Systems, Automotive Hybrid Vehicles, Automotive Hybrid Safety and Emergency Response and Fuel Cells. (Prerequisite: Accepted to the Automotive Technician or Automotive Technology program)

10-602-200 DIESEL FUEL TECHNOLOGY ...develop the knowledge, skills, process, and understanding of automotive diesel fuels diesel fuel system components, diesel fuel system testing and diesel engine operation. (Prerequisite: 10-602-199 Alternative Fuels Technology)

10-602-201 VEHICLE COMPUTER CONTROLLED SYSTEMS ...develop the knowledge, skills, process, and understanding of related electronic module sensor/switch testing, input/output data interpretation and testing components with scanner/lab scope testers. (Corequisite: 10-602-128 Electrical and Electronic Systems 3)

10-602-202 ADVANCED VEHICLE MANUFACTURE TECHNOLOGY ...diagnose, service and repair intermittent drivability concerns, monitoring live PID data with scanner, graphing data with lab scope, fuel injection monitoring with scanner, graphing fuel injectors with lab scope, performing diagnostic snapshot/recordings of live vehicle data, and playing back the recorded data to isolate the concern. (Prerequisites: 10-602-198, Engine Performance 2; 10-602-128 Electrical and Electronic Systems 3)

10-602-203 VEHICLE BODY MECHANICAL SERVICE ...knowledge, skills, process, and understanding of internal door components/moveable glass, body opening adjustments, exterior body components, seat removal/repair, sunroof repair, wind noise diagnosis, water leak diagnosis, and interior trim. (Prerequisite: Accepted to the Automotive Technician or Automotive Technology program)

31-442-350 WELDING-MACHINE TRADES ...oxyacetylene welding, brazing, soldering; cutting, hardsurfacing, out-of-position welding, arc welding of machines/accessories, running beads, types of joints, welding thin gauge, arc cutting, and heating.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Automotive Technology prepares students for work in an automotive repair facility. Students learn to diagnose and service automobiles under conditions similar to an actual repair facility. Students will develop repair facility management skills such as telephone etiquette, communication techniques, operation, managing, and organization skills.

Program Outcomes

- Automotive Technology graduates will demonstrate technical aptitude and proficiency by diagnosis and repair of the following ASE service areas:
- A1 Engine Repair
- A2 Automatic Transmission/Transaxle
- A3 Manual Drive Train & Axle
- A4 Suspension & Steering
- A5 Brakes
- A6 Electric/Electronic Systems
- A7 Heating & A/C
- A8 Engine Performance

In addition, graduates will also be able to:
- Communicate positively and effectively with the customer
- Communicate positively and Create and complete customer repair orders accurately
- Organize a daily work schedule for him/herself and for team members
- Tabulate a daily time sheet of technicians repair work

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized

plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982
- High school background in mathematics, science, and technology education.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Automotive Service Technician: Diagnoses vehicle malfunctions, performs appropriate repairs, and recommends/conducts regular vehicle maintenance.

Automotive Electronics Specialist: Utilizes hi-tech equipment to troubleshoot complex electrical and computer malfunctions. Replaces and reprograms engine, body and transmission controllers.

Brake Specialist: Performs complete brake system safety inspections, diagnoses brake system concerns and makes necessary repairs.

Steering, Suspension & Alignment Specialist: Diagnoses and repairs steering and suspension system concerns, utilizes computerized equipment to perform suspension and steering system adjustments.

Transmission and Drive Train Specialist: Diagnoses and repairs concerns related to automatic and manual transmissions, drive trains and differentials.

Engine Performance Specialist: Utilizes hi-tech equipment to diagnose and repair engine drivability concerns relating to engine mechanical, ignition and fuel systems.

Heating & Air Conditioning Specialist: Diagnoses and repairs heating and air conditioning control systems.

Engine Repair Specialist: Diagnoses engine mechanical failure. Disassembles, inspects, and measures engine components. Recommends/conducts component replacement.

Shop Foreman: Works with the technician and customer to get vehicles repaired correctly.

Parts Manager: Organizes and oversees the parts department. Works with the technicians to get the correct parts to repair the vehicles.

Warranty Claims Person: Calculates the amount of time spent repairing a vehicle compared to what the manufacturer will allow.

Curriculum

Students following the study plan below will complete the Automotive Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-602-104	Brake Systems	3
10-602-107	Auto Service Fundamentals	2
10-602-124	Steering & Suspension Systems	3
10-602-125	Electrical&Electronic Systems 1	2
10-602-199	Alternative Fuels Technology	1
*10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-602-103	Engine Repair 1	2
10-602-127	Electrical & Electronic Systems 2	3
10-602-195	Advanced Chassis Systems	2
10-602-197	Engine Performance 1	3
10-602-198	Engine Performance 2	4
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		17

THIRD SEMESTER		
10-602-123	Engine Repair 2	3
10-602-128	Electrical&Electronic Systems 3	3
10-602-196	Climate Control Systems	3
10-602-200	Diesel Fuel Technology	1
10-602-201	Vehicle Computer Controlled Sy	1
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-602-109	Auto Transmission/Transaxle	4
10-602-149	Manual Drive Train and Axles	4
10-602-150	Automotive Certification Prep	1
10-602-202	Advanced Vehicle Man Tech	3
10-602-203	Vehicle Body Mechanical Svc	1
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		19
TOTAL CREDITS		71

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Owner/Operator: Owns and operates his/her own repair facility, may have employees working for them.

Accreditation

- All NWTC Automotive programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards.
- All instructional staff in the NWTC Automotive Programs are, at a minimum, Master, ASE Certified Technicians.
- NATEF (National Automotive Technicians Education Foundation)

The following certificates/technical diplomas may be applied toward this program:
- 906021, Service Writer Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-602-103 ENGINE REPAIR 1 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on in-vehicle repairs including engine cooling and lubrications. (Prerequisite: 10-602-107 Automotive Service Fundamentals)

10-602-104 BRAKE SYSTEMS ...develop the skills needed to diagnose, service and repair vehicle braking systems with an introduction to ABS. (ABS diagnosis, service and repair will be addressed in the Advanced Chassis course.)(Corequisite: 10-602-107 Automotive Service Fundamentals)

10-602-107 AUTOMOTIVE SERVICE FUNDAMENTALS ...safety and the use of basic hand/power tools in accordance with industry standards. Introduced to the automotive service industry and learn to use both comprehensive and manufacturer's service information to perform basic under-hood and under-car services. (Prerequisite: Accepted into the Automotive Technology and/or Automotive Technician program)

10-602-109 AUTOMATIC TRANSMISSION/TRANSAXLE ...develop the skills needed to diagnose, service and repair automatic transmission/transaxles including overhaul procedures. (Prerequisite:10-602-127 Electrical and Electronic Systems 2)

10-602-123 ENGINE REPAIR 2 ...develop the skills needed to diagnose, service and repair internal combustion engines. Emphasis is placed on out-of-vehicle engine repair including overhaul procedures. (Prerequisite: 10-602-103 Engine Repair 1.)

10-602-124 STEERING AND SUSPENSION SYSTEMS ...developing the skills needed to diagnose, service and repair steering and suspension systems including wheel alignment procedures. (Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

10-602-125 ELECTRICAL AND ELECTRONIC SYSTEMS 1...develop the skills needed to diagnose, service and repair electrical and electronic systems. Learners apply Ohm's Law to basic electrical circuit diagnosis. (Prerequisites: Accepted into the Automotive Technology or Auto Collision Repair and Refinishing Technology/Technician program; Corequisite: 10-602-107, Automotive Service Fundamentals or 10-405-100, Introduction to Collision Repair)

10-602-127 ELECTRICAL AND ELECTRONIC SYSTEMS 2 ...develop the skills needed to diagnose, service and repair electrical and electronic systems, including batteries, starting, charging, and lighting systems, and computer control systems. (Prerequisite: 10-602-125 Electrical and Electronic Systems 1)

10-602-128 ELECTRICAL AND ELECTRONIC SYSTEMS 3 ...develop the skills needed to diagnose, service and repair electrical and electronic systems including driver information, horn, wiper/washer, power accessories, cruise control, air bag, antitheft and radio systems (Prerequisite: 10-602-127, Electrical&Electronic Systems2)

10-602-149 MANUAL DRIVE TRAIN AND AXLES ...develop the skills needed to diagnose, service and repair clutches, manual transmissions/transaxle, differentials, four wheel drive/all wheel drive, and drive axles. (Prerequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-150 AUTOMOTIVE CERTIFICATION PREPARATION ...this course provides an opportunity for students to develop the knowledge, skills and understanding required to successfully complete the Automotive Technician certification test.

10-602-195 ADVANCED CHASSIS SYSTEMS ...develop the skills needed to diagnose, service and repair antilock brake, vehicle stability enhancement, and electronic steering and suspension system. (Prerequisites: 10-602-104 Brake Systems; 10-602-124 Steering and Suspension System; 10-602-125 Electrical and Electronic Syst)

10-602-196 CLIMATE CONTROL SYSTEMS ...develop the skills needed to diagnose, service and repair climate control systems including heating, cooling, and air distribution. (Prerequisite: 10-602-127, Electrical and Electronic Systems 2)

10-602-197 ENGINE PERFORMANCE 1 ...develop the skills needed to diagnose, service and repair powertrain control and ignition systems. Emphasis on diagnostic procedures and the problem-solving techniques associated with automotive engine performance and drivability. (Prerequisite: 10-602-103 Engine Repair 1; Corequisite: 10-602-127 Electrical and Electronic Systems 2)

10-602-198 ENGINE PERFORMANCE 2 ...develop the skills needed to diagnose, service and repair fuel and emission control systems. Emphasis on diagnostic procedures, problem-solving techniques associated with automotive engine performance and drivability. (Corequisite: 10-602-197 Engine Performance 1)

10-602-199 ALTERNATIVE FUELS TECHNOLOGY ...develop the knowledge, skills, process, and understanding of Compressed Natural Gas (CNG) Systems, Automotive Hybrid Vehicles, Automotive Hybrid Safety and Emergency Response and Fuel Cells.

10-602-200 DIESEL FUEL TECHNOLOGY ...develop the knowledge, skills, process, and understanding of automotive diesel fuels diesel fuel system components, diesel fuel system testing and diesel engine operation. (Prerequisite: 10-602-199 Alternative Fuels Technology)

10-602-201 VEHICLE COMPUTER CONTROLLED SYSTEMS ...develop the knowledge, skills, process, and understanding of related electronic module sensor/switch testing, input/output data interpretation and testing components with scanner/lab scope testers. (Corequisite: 10-602-128 Electrical and Electronic Systems 3)

10-602-202 ADVANCED VEHICLE MANUFACTURE TECHNOLOGY ...diagnose, service and repair intermittent drivability concerns, monitoring live PID data with scanner, graphing data with lab scope, fuel injection monitoring with scanner, graphing fuel injectors with lab scope, performing diagnostic snapshot/recordings of live vehicle data, and playing back the recorded data to isolate the concern. (Prerequisites: 10-602-198, Engine Performance 2; 10-602-128 Electrical and Electronic Systems 3)

10-602-203 VEHICLE BODY MECHANICAL SERVICE ...knowledge, skills, process, and understanding of internal door components/moveable glass, body opening adjustments, exterior body components, seat removal/repair, sunroof repair, wind noise diagnosis, water leak diagnosis, and interior trim.

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Lakeshore Technical College.

Program Description

You've read the scrolling captions for the hearing-impaired on your TV screen. The person providing instantaneous text of programs is trained in realtime transcription techniques and technology. These skills can also be used to provide CART (Communication Access to Realtime Translation) for hearing-impaired students in educational as well as public settings. If you're an excellent listener, have strong language and communication skills, are committed to accuracy and able to work on deadline, a career in broadcast captioning may be a perfect fit for your talents.

Program Outcomes

• Develop proficiency in machine shorthand using realtime theory.

• Develop a personal dictionary, read, translate, and edit transcripts using CAT (computer-aided transcription) software.

• Demonstrate knowledge of proper captioning procedures and responsibilities for captioning and CART reporting.

• Demonstrate knowledge of the professional reporting organizations and methods of gaining certification as a Certified Broadcast Captioner.

Requirements for Program Entry

• Broadcast Captioning is a collaborative program between LTC and NWTC. Application for this program must be completed through LTC.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

• Broadcast Captioner

• CART Reporter

• Internet Reporter

• Offline Captioner

• Conference and Convention Reporter

About Shared Programs

LTC offers its Broadcast Captioning program in cooperation with technical colleges across the state. As a broadcast captioning student, you'll:

• Attend live, interactive TV classes and labs at your local technical college.

• Take general studies classes and labs at your local technical college.

Curriculum

Broadcast Captioning is a collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon completion, a student will have earned 70 credits.

FIRST SEMESTER		CREDITS
10-170-106	Realtime Reporting I	5
10-170-144	Realtime Reporting Orientation	1
10-170-160	Legal Terminology	1
10-170-184	English for Realtime Reporters	1
10-170-804	Realtime Reporting I Lab	1
10-801-136	English Composition 1	3
OR		
*10-801-195	Written Communication	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		15

SECOND SEMESTER		
10-170-105	Realtime Reporting II	5
10-170-159	Realtime Reporting Technology	2
10-170-805	Realtime Reporting II Lab	1
10-801-196	Oral/Interpersonal Comm	3
OR		
10-801-198	Speech	3
10-809-172	Intro to Diversity Studies	3
OR		
10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		17

SUMMER SEMESTER		
Realtime Reporting Speed Dev		2
SEMESTER TOTAL		2

THIRD SEMESTER		
10-170-109	Literary I-Advanced	2
10-170-128	Jury Charge I-Advanced	2
10-170-156	Testimony 1-Advanced	3
10-170-809	Literary I Lab-Advanced	1
10-170-828	Jury Charge I Lab-Advanced	1
10-170-859	Testimony I Lab-Advanced	1
10-804-123	Math w Business Apps	3
OR		
10-804-106	Intro to College Math	3
OR		
10-806-112	Principles of Sustainability	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-170-111	Literary II-Advanced	2
10-170-129	Jury Charge II-Advanced	2
10-170-141	Court Reporting Procedures	2
10-170-145	Court Reporting Internship	1
10-170-157	Testimony II-Advanced	3
10-170-171	Medical Reporting/Terminology	2
10-170-811	Literary II Lab-Advanced	1
10-170-829	Jury Charge II Lab-Advanced	1
10-170-857	Testimony II Lab-Advanced	1
SEMESTER TOTAL		15

SUMMER SEMESTER		
10-170-101	Captioning/CART	4
10-170-143	Internship: Broadcast Cap/CART	1
SEMESTER TOTAL		5
TOTAL CREDITS		70

CURRICULUM NOTE
* Written Communication, 10-801-195, is available only at Lakeshore Technical College.

Beginning Courses Required Prior
to Advanced Courses:
10-170-121	Jury Charge I-Beginner
10-170-826	Jury Charge I Lab-Beginner
10-170-122	Jury Charge II-Beginner
10-170-827	Jury Charge II Lab-Beginner
10-170-113	Literary I-Beginner
10-170-808	Literary I Lab-Beginner
10-170-114	Literary II-Beginner
10-170-810	Literary II Lab-Beginner
10-170-153	Testimony I-Beginner
10-170-858	Testimony I Lab-Beginner
10-170-154	Testimony II-Beginner
10-170-855	Testimony II Lab-Beginner

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-170-101 CAPTIONING/CART ...prepares the learner to write dictation at 180 wpm, broadcast 10 minutes non-stop, write new punctuation and symbols, new flagged alphabet characters, environmental sounds, web/Internet addresses, common/ proper names, common female and male first names, governmental/political terms, terms applicable to food, the names of animals, finger-spell words, increase vocabulary, use terms applicable to criminology, and manage dictionaries. (Concurrent registration in Captioning/ CART I Lab at student's campus is required.)

10-170-105 REALTIME REPORTING II ...prepares the learner to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet," apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent registration in Realtime Reporting 2 Lab is required.

10-170-106 REALTIME REPORTING I ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting 1 Lab is required. CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting or 101061 Judicial Reporting program requirements met..

10-170-108 REALTIME REPORTING SPEED DEVELOPMENT ...further develops skills acquired in Realtime Reporting 2 on literary, jury charge, and testimony material beginning at 120 wpm. Scheduled during the summer term, students must pass two, 3-minute timings at a minimum speed of 110 words per minute. (Prerequisite: 10170105, Realtime Reporting 2 or 10106105 Realtime Reporting 2)

10-170-109 LITERARY I-ADVANCED ...prepares the learner to write literary material at 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary I Lab-Advanced is required. (Prerequisite: 10170113 Literary 1-Beginner or 10106113 Literary 1-Beginner or CONDITION: Minimum of 130 WPM met)

10-170-111 LITERARY II-ADVANCED ...prepares the learner to write literary material at 180 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. (Concurrent registration in Literary II Lab-Advanced is required. (Prerequisite: 10170114 Literary 2-Beginner or 10106114 Literary 2-Beginner)

10-170-128 JURY CHARGE 1-ADVANCED ...prepares the student to write jury charge material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. (Concurrent registration in Jury Charge 1 Lab-Advanced is required.) Prerequisite: 10170121, Jury Charge 1-Beginner or 10106121, Jury Charge 1-Beginner or CONDITION: Minimum of 130 WPM met.

10-170-129 JURY CHARGE II-ADVANCED ...prepares the learner to write jury charge material at 200 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge II Lab-Advanced is required. (Prerequisite: 10170122 Jury Charge 2-Beginner or 10106122 Jury Charge 2-Beginner or CONDITION: Minimum of 180 WPM met.)

10-170-141 COURT REPORTING PROCEDURES ...introduces the student to reporting procedures for which reporters are responsible in the courtroom, deposition, and real-time reporting environments, including preparing salable transcripts, researching legal citations, and developing professional development plans.

10-170-143 INTERNSHIP IN BROADCAST CAPTIONING/ CART ...prepares the learner to caption live broadcast, use television broadcast terminology, describe television broadcast operations, and provide CART services to a hearing-impaired person. Students must be writing at 180 words per minute literary prior to enrolling in this course.

10-170-144 REALTIME REPORTING ORIENTATION ...prepares the student to use computer-assisted, real-time transcription software, Windows, e-mail, a steno machine, and a laptop in writing machine shorthand in court reporting and to complete and submit required coursework. CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting program requirements met.

10-170-145 COURT REPORTING INTERNSHIP ...prepares the student to write machine shorthand verbatim for a minimum of 40 hours of actual writing time in the courtroom, classroom, and deposition environment under the supervision of a working reporter; prepare a 40-page transcript, and summarize the internship experience in a narrative report. (Prerequisite: 10106108 or 10170108 Realtime Rptg Speed Dev.,10106128 or 10170128 Jury Chrg 1-Adv., 10106109 or 10170109 Lit 1-Adv, 10106156 or 10170156 Test 1-Adv & Corequisite: 10106129 or 10170129 Jury Chrg 2-Adv., 10106111 or 10170111 Lit 2-Adv., and 10106157 or 10170157 Test 2-Adv)

10-170-156 TESTIMONY 1-ADVANCED ...prepares the student to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. (Concurrent registration in Testimony I Lab-Advanced is required.) Prerequisite: 10170153 Testimony 1-Beginner or 10106153 Testimony 1-Beginner or CONDITION: or Minimum of 130 WPM met.

10-170-157 TESTIMONY II-ADVANCED ...prepares the learner to write 2-voice testimony material at 225 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Testimony II Lab-Advanced is required. (Prerequisite: 10170154 Testimony 2-Beginner or 10106154 Testimony 2-Beginner or CONDITION: Minimum of 190 WPM met)

10-170-159 REALTIME REPORTING TECHNOLOGY ...prepares the student to use CAT (Computer-Assisted Transcription) and real-time software; build personal dictionaries; and read, translate, and edit transcripts. Students are introduced to real-time translation procedures in court, depositions, captioning, and educational environments.

10-170-160 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-170-171 MEDICAL REPORTING & TERMINOLOGY ...prepares the student to write medical terminology in machine shorthand using appropriate medical terminology from material dictated at a minimum speed of 150 wpm for 5 minutes with a minimum of 95 percent accuracy. The student will research medical information, prepare salable transcripts, and submit timings. (Prerequisite: 10170156 Testimony 1-Adv or 10106156 Testimony 1-Adv)

10-170-184 ENGLISH FOR REALTIME REPORTERS ...enhances the student's ability to use proper English grammar, spelling, punctuation, capitalization, and vocabulary techniques in the transcription of the spoken word.

10-170-804 REALTIME REPORTING I LAB ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting I is required. Corequisite: 10170106 Realtime Reporting 1 or 10106104 Realtime Reporting 1 and CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting or 101061 Judicial Reporting program requirement met.

10-170-805 REALTIME REPORTING II LAB ...expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet," apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory. Concurrent registration in Realtime Reporting 2 is required. (Corequisites: 10170105 Realtime Reporting 2 or 10106105 Realtime Reporting 2)

10-170-809 LITERARY I LAB-ADVANCED ...expands the student's ability to write literary material dictated at a speed of 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170109, Literary I-Advanced or 10106109, Literary 1-Advanced)

10-170-811 LITERARY II LAB-ADVANCED ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Literary II-Advanced is required. (Corequisite: 10170111 Literary 2-Advanced or 10106111 Literary 2-Advanced or minimum of 160 WPM met)

10-170-828 JURY CHARGE I LAB-ADVANCED ...prepares the student to write jury charge material dictated at a speed of 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170128, Jury Charge I-Advanced or 10106128, Jury Charge 1-Advanced)

10-170-829 JURY CHARGE II LAB-ADVANCED ...expands the student's ability to write jury charge material at 200 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Jury Charge II-Advanced is required. (Corequisite: 10170129 Jury Charge 2-Advanced or 10106129 Jury Charge 2-Advanced)

10-170-857 TESTIMONY II LAB-ADVANCED ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three, 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR Exam. Concurrent registration in Testimony II-Advanced is required. (Corequisite: 10170157 Testimony 2-Advanced or 10106157 Testimony 2-Advanced)

10-170-859 TESTIMONY I LAB-ADVANCED ...expands the student's ability to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170156, Testimony 1-Advanced or 10106156 Testimony 1-Advanced)

10-804-106 INTRODUCTION TO COLLEGE MATH Ôan introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool.

Offered at the Green Bay campus. Most first year program courses available through out the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Business Management program provides learners with foundational skills needed to manage the operations of a business. Graduates prepare to successfully meet the challenges and opportunities encountered in today's dynamic business environment. Learners develop competence in the business functions of planning, organizing, directing, and controlling.

General business managers are found in nearly all work settings in virtually every sector of the economy. Business management salaries vary by company and position. Most graduates begin in positions of limited responsibility and will advance through the ranks of the organization.

The purpose of the program is to develop business professionals who can grow with the needs of their employers. Program curriculum will develop or improve the core skills that are vital for success in the business world.

Program Outcomes

- Plan the operations of a business across functional areas.
- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Control business processes.
- Apply concepts, methods, and processes in business operations.
- Understand the financial components of an organization.
- Apply marketing strategies.
- Apply current and emerging technologies to business situations.
- Analyze and synthesize information

and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, a graduate may find employment opportunities as a manager of operations with increased responsibility, authority and commensurate pay.

Note
- IT IS RECOMMENDED COURSES BE TAKEN IN THE ORDER LISTED. Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
- Most credits from this degree can be transferred to some four-year

colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
- 901023, Business Operations Certificate
- 901047, Promotions & Events Management

Curriculum

Students following the study plan below will complete the Business Management associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-104-110	Marketing Principles	3
10-105-102	Career Planning	2
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations Management 1	3
10-196-189	Team Building/Prob Solve	3
10-196-193	Human Resource Mgmt	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-184	Business Finance/Budgeting	3
10-101-190	Accounting-QuickBooks	1
10-102-157	Operations Management 2	3
10-105-103	Career Preparation	1
10-182-110	Lean Operations Mgmt	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Career Experience	2
10-104-191	Customer Service	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/ BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w/ Business Apps)

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-156 OPERATIONS MANAGEMENT 1 ...a cross-functional approach to operations management with an overview of safety, quality, and service. (Prerequisite: 10-102-158 Business Principles)

10-102-157 OPERATIONS MANAGEMENT 2 ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisites: 10-102-156, Operations Management 1; 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-102-199 BUSINESS MANAGEMENT CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, Six Sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-196-189 TEAM BUILDING/ PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

Business Management - Advertising & Promotions Emphasis
Program Code 101023-P | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

Program Description
The Advertising & Promotions emphasis educates learners for careers as meeting planners, marketing specialists, sales personnel, convention service managers and event coordinators in lodging and food service operations, casinos, visitor and convention bureaus, a Chamber of Commerce, and nonprofit organizations.

Program Outcomes
- Plan the operations of a business across functional areas.
- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Control business processes.
- Apply concepts, methods, and processes in business operations.
- Understand the financial components of an organization.
- Apply marketing strategies.
- Apply current and emerging technologies to business situations.
- Analyze and synthesize information and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry
- Completed application.
- To apply to Business Management - Advertising & Promotions Emphasis, choose the Business Management Program. You will declare your emphasis during your 1st semester.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, graduates may find other opportunities for employment.

Note
- IT IS RECOMMENDED COURSES BE TAKEN IN THE ORDER LISTED.
- Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
- 901023, Business Operations Certificate

Curriculum
Students following the study plan below will complete the Business Management Advertising & Promotions associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-104-110	Marketing Principles	3
10-105-102	Career Planning	2
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations Management 1	3
10-104-107	Marketing Comm-Integrated	3
10-104-176	Social Media Consumer Behavior	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-157	Operations Management 2	3
10-104-101	Selling Principles	3
10-104-119	Social Media Marketing	3
10-105-103	Career Preparation	1
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		**17**

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Internship Practicum	2
10-104-125	Event Marketing	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**69**

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-156 OPERATIONS MANAGEMENT 1 ...a cross-functional approach to operations management with an overview of safety, quality, and service. (Prerequisite: 10-102-158 Business Principles)

10-102-157 OPERATIONS MANAGEMENT 2 ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisites: 10-102-156, Operations Management 1; 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-102-199 BUSINESS MANAGEMENT CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-104-107 MARKETING COMMUNICATIONS-INTEGRATED ...creating, coordinating and integrating advertising, public relations and marketing activities for a specific customer or audience. A campaign will be developed and presented.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-119 SOCIAL MEDIA MARKETING ...understand the social media revolution. This course will provide students with the practical knowledge and insights needed to successfully plan, implement, manage and measure social media marketing efforts.

10-104-125 EVENT MARKETING... planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-176 SOCIAL MEDIA CONSUMER BEHAVIOR ...identify technology trends that impact media usage and its effectiveness.

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Business Management - Entrepreneurship Emphasis
Program Code 101023-E | Associate Degree

Offered at the Green Bay campus. Most first year program courses available through out the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

Program Description
The Entrepreneurship emphasis educates learners on the opportunities and essence of entrepreneurship and how to start, run, and manage profitable businesses.

Program Outcomes
- Plan the operations of a business across functional areas.
- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Control business processes.
- Apply concepts, methods, and processes in business operations.
- Understand the financial components of an organization.
- Apply marketing strategies.
- Apply current and emerging technologies to business situations.
- Analyze and synthesize information and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry
- Completed application.
- To apply to Business Management Entrepreneurship Emphasis, choose the Business Management Program. You will declare your emphasis during your 1st semester.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, graduates may find other opportunities for employment.

Note
- IT IS RECOMMENDED COURSES BE TAKEN IN THE ORDER LISTED.
- Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
- 901023, Business Operations Certificate

Curriculum
Students following the study plan below will complete the Business Management Entrepreneurship associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-104-110	Marketing Principles	3
10-105-102	Career Planning	2
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations Management 1	3
10-145-185	Organizing Your Small Business	3
10-145-186	Financial Management-Small Bus	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-157	Operations Management 2	3
10-105-103	Career Preparation	1
10-145-187	Marketing Your Small Business	3
10-145-188	Entrepreneurial Service Mgmt	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Career Experience	2
10-145-189	Writing a Business Plan-Sm Bus	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-156 OPERATIONS MANAGEMENT 1 ...a cross-functional approach to operations management with an overview of safety, quality, and service. (Prerequisite: 10-102-158 Business Principles)

10-102-157 OPERATIONS MANAGEMENT 2 ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisites: 10-102-156, Operations Management 1; 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-102-199 BUSINESS MANAGEMENT CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-145-185 ORGANIZING YOUR SMALL BUSINESS ...the components of small business ownership; examining a variety of small business startup and operation scenarios. Assesses your own readiness to begin the entrepreneurial adventure.

10-145-186 FINANCIAL MANAGEMENT-SMALL BUSINESS ...the importance of good recordkeeping systems, reports, and the records necessary for a small business. Financial analysis techniques are explored through hands-on Income statements and cash flow projections for small businesses.

10-145-187 MARKETING YOUR SMALL BUSINESS ...implement and evaluate a marketing plan for their small business. Students will develop a marketing plan for a selected small business. Components of the plan include market research, customer focus, quality, pricing, and advertising.

10-145-188 ENTREPRENEURIAL SERVICE MANAGEMENT ...the elements of your successful business with a strategic plan that focuses on servicing your customer with a winning attitude, performance, teamwork, and competition.

10-145-189 WRITING A BUSINESS PLAN-SMALL BUSINESS ...as a necessary component to beginning a small business, from addressing facets of the business plan, observing various types of plans, to realizing readiness to begin. Plan preparation/presentation are required.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

Program Description

The Global Supply Chain emphasis prepares students for all logistical activities involved in the flow of goods - from point of origin to the point of consumption.

Program Outcomes

• Plan the operations of a business across functional areas.
• Organize resources to achieve the goals of the organization.
• Direct individuals and/or processes to meet organizational goals.
• Control business processes.
• Apply concepts, methods, and processes in business operations.
• Understand the financial components of an organization.
• Apply marketing strategies.
• Apply current and emerging technologies to business situations.
• Analyze and synthesize information and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry

• Completed application.
• To apply to Business Management Global Supply Chain Emphasis, choose the Business Management Program. You will declare your emphasis during your 1st semester.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, graduates may find other opportunities for employment.

Note
• IT IS RECOMMENDED COURSES BE TAKEN IN THE ORDER LISTED.
• Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
• Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
• 901023, Business Operations Certificate

Curriculum

Students following the study plan below will complete the Business Management Global Supply Chain associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-104-110	Marketing Principles	3
10-105-102	Career Planning	2
10-804-123	Math w/Business Apps	3
10-801-136	English Composition 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations Management 1	3
10-104-148	Global Marketing	3
10-182-160	Global Supply Chain Mgmt	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-157	Operations Management 2	3
10-105-103	Career Preparation	1
10-182-131	Negotiations	3
10-182-162	Import/Export Compliance	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-102-104	International Business Prac	3
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Career Experience	2
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-104 INTERNATIONAL BUSINESS PRACTICE FIRM ...(IBPF) students will start up their own business and sell and buy products in a virtual classroom environment. Each student will play the role of a manager. (Prerequisite: 10-801-136, English Composition 1)

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-156 OPERATIONS MANAGEMENT 1 ...a cross-functional approach to operations management with an overview of safety, quality, and service. (Prerequisite: 10-102-158 Business Principles)

10-102-157 OPERATIONS MANAGEMENT 2 ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisites: 10-102-156, Operations Management 1; 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-102-199 BUSINESS MANAGEMENT CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-148 GLOBAL MARKETING ...tools necessary for the student to understand the risks, rewards, and the technical aspects of doing business in a global environment.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-182-131 NEGOTIATIONS ...techniques and skills used in bargaining to maximize a company's profits and competitiveness. Appropriate for learners in any Business and Information Technology program as well as for non-program students. (Prerequisite: 10-801-136, English Composition 1)

10-182-160 GLOBAL SUPPLY CHAIN MANAGEMENT ...methods of foreign market entry, international contracts, INCOTERMS 2000, terms of payment, international commercial documents, international insurance, export packaging, customs clearance, and global supply chain logistics infrastructure.

10-182-162 IMPORT/EXPORT COMPLIANCE ...develop import/export-related documentation, examine import/export controls and licenses, and explore import/export related security. Examine compliance requirements related to importing/exporting goods in support of global operations and in response to case studies. (Prerequisite: 10-182-160, Global Supply Chain Management)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Business Management - Hotel & Restaurant Emphasis
Program Code 101023-H | Associate Degree

Offered at the Green Bay and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

Program Description
The Hotel & Restaurant emphasis educates learners for mid-management careers in hotel management, food service operations and tourism.

Program Outcomes
- Plan the operations of a business across functional areas.
- Organize resources to achieve the goals of the organization.
- Direct individuals and/or processes to meet organizational goals.
- Control business processes.
- Apply concepts, methods, and processes in business operations.
- Understand the financial components of an organization.
- Apply marketing strategies.
- Apply current and emerging technologies to business situations.
- Analyze and synthesize information and make decisions that support the organization's mission and help the business to successfully adapt to a changing environment.

Requirements for Program Entry
- Completed application.
- To apply to Business Management Hotel & Restaurant Emphasis, choose the Business Management Program. You will declare your emphasis during your 1st semester.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
There are many job listings that would be appropriate for a graduate of the Business Management program. Small organizations typically require generalist skills and large organizations tend toward some specialization among their managers.

With additional education and/or work experience, a graduate may find employment opportunities as a manager of operations with increased responsibility, authority and commensurate pay.

Note
- IT IS RECOMMENDED COURSES BE TAKEN IN THE ORDER LISTED.
- Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

The following certificates/technical diplomas may be applied toward this program:
- 901023, Business Operations Certificate

Curriculum
Students following the study plan below will complete the Business Management Hotel & Restaurant associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-104-110	Marketing Principles	3
10-105-102	Career Planning	2
10-109-114	Hotel Management	3
10-801-136	English Composition 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations Management 1	3
10-109-168	Restaurant Management	3
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-157	Operations Management 2	3
10-105-103	Career Preparation	1
10-109-126	Hospitality Finance	3
10-109-127	Hospitality Facilities Mangement	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		**17**

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Career Experience	2
10-104-125	Event Marketing	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**69**

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-156 OPERATIONS MANAGEMENT 1 ...a cross-functional approach to operations management with an overview of safety, quality, and service. (Prerequisite: 10-102-158 Business Principles)

10-102-157 OPERATIONS MANAGEMENT 2 ...the process of evaluating alternative courses of action to given problems and arriving at the most suitable plan. Entails thorough analysis of the pros and cons of every alternative solution. (Prerequisites: 10-102-156, Operations Management 1; 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-102-199 BUSINESS MANAGEMENT CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-125 EVENT MARKETING... planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-109-114 HOTEL MANAGEMENT ...lodging classification, ownership/affiliation, hotel/front office organization, equipment, reservations, registration, guest services, guest accounting, credit monitoring, check-out/settlement, night audit, management functions, room statistics, yield management, staffing.

10-109-126 HOSPITALITY FINANCE ...purchasing/receiving controls, storing/issuing controls, production controls, monitoring activities, sales controls, beverage controls, labor controls.

10-109-127 HOSPITALITY FACILITIES MGMT ...staffing housekeeping operations, facilities safety and security, cleaning routines, material selection, laundry operations, controlling costs in housekeeping and maintenance departments, facility systems.

10-109-168 RESTAURANT MANAGEMENT ...food/beverage industry, product classifications, responsible service; bar/kitchen equipment/organization; maintaining clean/sanitary facilities; staffing, training, supervising food/beverage employees; promotions planning; budgeting/cost controls of food/beverage operations.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Certified Medication Assistant   Program Code 305105 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description

The Certified Medication Assistant is a Certified Nursing Assistant employed in a nursing home who administers specific medications under the supervision of the nursing staff. The program provides an opportunity for students to develop the knowledge of standard practices related to administration of medications affecting multiple body systems.

Program Outcomes

- Define the legal and ethical responsibilities associated with the role of medication assistant.
- Identify factors that influence the effects of medications on the individuals.
- Utilize guidelines common to administration of all medications.
- Utilize knowledge of systems of measurement when administering medications.
- Administer medications safely and efficiently by selected routes.
- Identify effects of common medications on each body system.
- Describe the effects of normal aging on pharmacokinetics.

Requirements for Program Entry

- Be a current employee in a nursing home.

- Requirements for program entry must be completed prior to the start of the program.
- At least 18 years of age.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be on the State of Wisconsin Nurse Aide Directory, with current Federal eligibility.
- Have at least 2000 hours experience in direct patient care within the last three years.
- Have worked a minimum of 40 hours, within the last 90 days, with the residents to whom the student will be administering medications.
- Submit a completed employer recommendation form. Available upon request.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 34; Reading Comprehension, 55: Sentence Skills, 60. Applicants not meeting these benchmarks are encouraged to contact an advisor or at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following area:

Certified Medication Assistant: maintain employment as a Certified Medication Assistant in a nursing home.

Note
A preceptor is an RN at the nursing

Curriculum

The Certified Medication Assistant Technical Diploma is a 100-hour program that includes 60 hours of theory/lab, held at NWTC Green Bay Campus, and 40 hours of clinical, held at the nursing home where the student is employed. Upon graduation, a student will have completed three credits. Orientation will be done during the first class.

FIRST SEMESTER	CREDITS
30-510-301 Certified Medication Assistant	3
SEMESTER TOTAL	3
TOTAL CREDITS	3

home where the student is employed. The preceptor acts as a mentor for the Medication Assistant student.

The vital role of the preceptor is to assist the learner in meeting the program outcomes. NWTC asks that the agency agree to the following requirements:

- While supervising students (maximum of 2 students) during the med pass, the preceptor will be dedicated to the med pass.
- Students will be assigned to the same wing/residents for the entire 40-hour clinical rotation.
- Med pass block of time is utilized for med pass skill development and medication education.

If your agency is unable to support these requirements, it is suggested you do not enroll students in this program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-510-301 CERTIFIED MEDICATION ASSISTANT....is a Certified Nursing Assistant employed in a nursing home who administers selected medications under the supervision of the nursing staff.

Civil Engineering Technology Program Code 106071 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Graduates of the Civil Engineering Technology program typically find employment in the Engineering or Surveying field. Careers include positions in Computer Aided Drafting and Design (CADD), construction administration and inspection, or surveying.

Program Objectives
Graduates will...
- be technically competent and able to solve civil engineering technology problems using basic principles of mathematics, science and engineering technology.
- be able to communicate effectively, both orally and in writing, using electronic tools and graphical representations.
- be effective team members.
- understand and appreciate diversity and professional behavior in engineering.
- understand the value of life-long learning and engage in professional growth.

Program Outcomes
- Students will utilize CAD and sketching techniques to produce engineering documents.
- Students will be capable of performing design and routine testing procedures related to construction materials. These materials include soils, Portland cement concrete and hot mix asphalt.
- Students will be capable of understanding the legal aspects of land surveying and use land surveying instruments to collect data necessary to produce topographic maps, establish horizontal and vertical control, and to lay out civil engineering projects.
- Students will demonstrate forces and stresses in elementary structural systems.
- Students will estimate material quantities for construction projects.
- Students will understand operating systems, spreadsheets, word processing, CAD, and other software products to solve technical problems.
- Students will be able to apply elements of design to materials mixtures, roads, subdivision layout, and storm and sanitary sewer systems.
- Students will be able to solve engineering, surveying, and materials testing problems using principles of mathematics, science, engineering and technology.
- Students will be able to conduct, analyze, interpret, and apply results of experiments related to science and civil engineering materials.
- Students will have the ability to function effectively on teams.
- Students will develop problem solving capabilities.
- Students will be able to communicate effectively by producing written and oral reports.
- Students will recognize the need to continue professional development by engaging in lifelong learning.

- Students will acquire an understanding of professional, ethical and social responsibilities.
- Students will have respect for race, ethnic and diversity issues.
- Students will have a commitment to quality, timelines and continuous improvement.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics, science, and CADD.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 80; Sentence Skills: 75; College Math: 63. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment. The benchmark grade for Civil Engineering Technology on the College Math assessment is 63. An alternative to the College Level Math assessment would be a score of 24 on the Math portion of the ACT.
- Attendance at orientation or a planned meeting with program staff is required.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Civil Construction Inspector: examines and interprets prints and specifications; confers with contractors and owners to enforce contract specifications, building codes, and zoning ordinances; and also inspects soils, asphalt, concrete, building construction, and underground utilities at the project site.

Civil Drafter: drafts detailed construction drawings, survey drawings, topographical profiles, related maps, and specification sheets used in planning construction of highways and streets, buildings, river and harbor improvements, landfills, flood control, drainage, railroads, airports, water and sewer systems, and other civil engineering projects using Computer Aided Drafting systems.

Civil Soils-Materials Technician: samples and performs tests on soils, hot mix asphalt, concrete, aggregate, and other construction materials; and identifies and classifies soil samples for foundation construction and environmental purposes.

Survey Technician: obtains data and makes computations pertaining to angles, distances, elevations, points, contours, and other purposes using levels, total stations, data collectors, global positioning systems, and other surveying instruments following approved surveying practices.

Curriculum
Students following the study plan below will complete the Civil Engineering Technology associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-606-112	Computer Apps for Technicians	1
10-606-113	CAD 2	
10-607-110	Cemented Aggregate Mixtures	4
10-607-119	Intro to Civil Engr Technology	2
10-607-121	Surveying/Mapping	3
10-801-196	Oral/Interpersonal Comm	3
10-804-196	Trigonometry w Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		**19**

SECOND SEMESTER

10-607-102	Land Surveying/Computer Appl	1
10-607-125	Civil Public Works Construct	2
10-607-128	Soil Mechanics	3
10-801-136	English Composition 1	3
10-804-195	College Algebra w Apps	3
10-806-154	General Physics 1	4
SEMESTER TOTAL		**16**

SUMMER SEMESTER

10-607-191	Civil Engineering Internship	1
SEMESTER TOTAL		**1**

THIRD SEMESTER

10-607-131	Surveying 2	4
10-607-134	Surveying-Drafting	3
10-607-235	Statics/Strength Materials-Civ	3
10-804-198	Calculus 1	4
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**17**

FOURTH SEMESTER

10-607-147	Water Technology	3
10-607-151	Highway Surveying	2
10-607-152	Construction Meth/Bldg Syst	2
10-607-153	Global Positioning Systems	2
10-607-154	Land Law 1	3
10-607-234	AutoCAD Civil 3D-Intro	1
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**16**
TOTAL CREDITS		**69**

CURRICULUM NOTE
Students must have had two years of high school algebra, one year of high school geometry and an acceptable Academic Skills Assessment College Math score or have completed or tested out of Intermediate Algebra w Apps, course 10-804-118, before taking the following First Semester program courses: -Soil Mechanics -Surveying/Mapping -Trigonometry w/Apps.

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program requirements.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Civil Engineer
- Construction Superintendent
- Building Inspector
- Civil Designer
- Construction Project Manager
- Surveyor

Accreditation
The Civil Engineering Technology Associate Degree program at NWTC is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org, under the commission's General Criteria and Program Specific Criteria for Civil Engineering Technology and Similarly Named Programs.

Board/Certiﬁcation Examinations
The program also meets the educational requirements to become a Licensed Land Surveyor in the state of Wisconsin.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-606-112 COMPUTER APPLICATIONS FOR TECHNICIANS...basics of a computer system, computer terminology, the Microsoft Windows environment, file management, Microsoft Word and Microsoft Excel.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-119, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-607-102 LAND SURVEYING/ COMPUTER APPLICATIONS ...overview of mapping software for applications in land surveying for mapping, contouring and calculations. (Prerequisites: 10-607-121, Survey & Mapping; 10-606-113, CAD)

10-607-110 CEMENTED AGGREGATE MIXTURES ...inspection/testing concepts, sampling procedures, aggregate properties, PCC mix design methods, HMA design, field laboratory quality control testing. ACI Grade I and WisDOT PCCTEC certifications are available through this course. (Corequisite: 10-804-196, Trigonometry w Apps)

10-607-119 INTRO TO CIVIL ENGINEERING TECHNOLOGY... portfolio preparation, lettering and printing, chart plotting, resume creation, library research methods, measurement and scaling, drawing techniques, sheet format and layout, dimensioning, line work, orthographic projection, isometric drawings, and construction print reading.

10-607-121 SURVEYING/MAPPING ...basic surveying principles, history of land, surveying, instruments in the field, making computations, and generating computerized maps. (Corequisites: 10-804-196, Trigonometry w Apps)

10-607-125 CIVIL PUBLIC WORKS CONSTRUCT ...horizontal curves, sewer/water systems, civil engineering mapping, field inspector roles, and CAD applications. (Prerequisites: 10-606-113, CAD; 10-804-196, Trigonometry w Apps)

10-607-128 SOIL MECHANICS ...origins of soil, properties/characteristics of soil, soil classification systems, subsurface exploration, foundations, moisture-density relationships, soil compaction, and groundwater. Certification in the use and transfer of portable nuclear density gauges is available through this course. (Prerequisites: 10-607-110, Cemented Aggregate Mixtures; 10-804-196, Trigonometry w Apps)

10-607-131 SURVEYING 2 ...closed traverse measurements, traverse adjustments, data collection, rectangular coordinate use, land area computation, topographic mapping, and computer applications. (Prerequisites: 10-607-102, Land Surveying/Computer Appl; 10-804-195, College Algebra w Apps)

10-607-134 SURVEYING DRAFTING ...land record forms, legal descriptions, public land systems, survey map plat drawing, certified survey map drawing, subdivision/preliminary plat drawing, and basic use of AutoCAD and a software in the preparation of drawings. (Prerequisite: 10-607-102, Land Surveying/Computer Appl)

10-607-147 WATER TECHNOLOGY ...hydrostatic pressure, continuity of flow, conservation of energy, flow in pipes under pressure, open channel flow, sewer design, water quality, wastewater treatment, rainfall, and reservoirs. (Prerequisites: 10-806-154, General Physics 1; 10-804-195, College Algebra w Apps; 10-804-196, Trigonometry w Apps)

10-607-151 HIGHWAY SURVEYING ...vertical curves, road design, volume calculations, site planning, and construction staking. (Prerequisite: 10-607-131, Surveying 2)

10-607-152 CONSTRUCTION METHODS AND BUILDING SYSTEMS ...building components, construction methods, construction materials, plans, specifications, and print reading. (Prerequisites: 10-607-110, Cemented Aggregate Mixtures; 10-607-125, Civil Public Works Construction; 10-607-128, Soil Mechanics)

10-607-153 GLOBAL POSITIONING SYSTEMS ...introduction and history of GPS; latitude, longitude, and state plane coordinate systems; static, rapid static, and kinematic positioning systems. (Prerequisites: 10-607-121, Surveying and Mapping; 10-804-195, College Algebra w Apps)

10-607-154 LAND LAW 1 ...registration laws of Wisconsin, history of property law, laws of evidence, performing a property survey, adverse possession, unwritten rights, professional liability/stature and role of the land surveyor in court. (Prerequisite: 10-607-134, Surveying-Drafting)

10-607-191 CIVIL ENGINEERING INTERNSHIP... the application of theory, skills, and techniques in the civil engineering profession. (Prerequisite: Instructor approval.)

10-607-234 AUTOCAD CIVIL 3D-INTRO ...working with survey, points, and surfaces; site design features including parcels, alignments, profiles, assemblies, pipes, and grading and quantities; and managing data. (Prerequisites: familiarity with a computer, knowledge and understand of civil engineering terminology and basic familiarity with AutoCAD is recommended.

10-607-235 STATICS/STRENGTH MATERIALS-CIVIL ....force analysis, moments, resultant and equilibrant forces; coplanar, concurrent, and nonconcurrent systems; static friction; basic relationships of stress and strain under axial, torsional, and bending loads; properties of construction materials. (Prerequisites: 10-806-154, General Physics 1; 10-804-195, College Algebra w Apps; 10-804-196, Trigonometry w Apps)

Computer Support Specialist IT Program Code 101543 | Associate Degree

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Computer Support Specialist - IT program emphasizes problem solving using current software packages, programming in Visual BASIC, hardware configurations, networking, operating systems, and software system design.

Program Outcomes

- Develop attractive and effective slide shows using PowerPoint presentation software.
- Develop professional letters and reports using Word document processing software.
- Develop professional and user-friendly spreadsheets using Excel spreadsheet software.
- Develop business applications which integrate and share different types of files or objects.
- Automate application software operations via macros and VBA programming techniques.
- Develop relational database applications using database management software to code SQL statements and queries.
- Design a normalized database and develop entity relationships.
- Develop attractive and effective Web pages using HTML and CSS coding techniques.
- Install, configure, and maintain computer hardware and peripherals.
- Troubleshoot and repair computer hardware and operating systems problems.
- Develop computer programs to perform common business functions using the Visual BASIC programming language.
- Perform basic computer system functions and operations using the command line and shell scripts.
- Configure and administer common microcomputer operating systems.
- Automate Windows operations using common operating system scripting languages.
- Perform common help desk and end-user support functions using current technologies and protocols.
- Plan and conduct computer training sessions using appropriate technologies and delivery methods.
- Develop effective lesson plans, training materials, and assessment tools to support technical presentations.
- Develop technical documentation and "help" resources to support the use of computer facilities and services.
- Apply job seeking skills to secure employment in the computer field.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- One year of high school algebra completed.
- Ability to use computer keyboard and mouse.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Reading Comprehension: 55; Sentence Skills: 75; Arithmetic: 65. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

IT Consultant: provides one-on-one problem solving for users.

Help Desk/Support Specialist: develops customized user menus, installs software packages, administers networks, and is a support technician for software packages.

PC Programmer: performs detailed program design, coding, testing, debugging, documentation, and implementation of online or interactive systems.

Computer Sales Representative: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

IT Trainer: trains employees on software packages which enable the user to solve problems on an individual basis.

Network Assistant: helps to configure networks, installs hardware and software, and trains users.

Desktop Application Developer: provides for the development, testing, implementation, documentation, and support of customized desktop applications.

PC Repair Technician: maintains and repairs hardware components of desktop computers, network servers and devices, and peripheral equipment including printers and scanners.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Network Administrator
- Database Administrator
- Internet Site Administrator
- Hardware Technician
- IT Department Supervisor

The following certificates/technical diplomas may be applied toward this program:

- 311546, Computer Support Technician - IT
- 901542, Computer Support Certificate - IT

Curriculum

Students following the study plan below will complete the Computer Support Specialist associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-154-160	IT:Support:Software-Intro	3
*10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
**10-890-101	College 101	1
	SEMESTER TOTAL	19

SECOND SEMESTER

10-102-158	Business-Principles	3
10-152-163	IT:Program: Visual Basic	3
10-154-153	IT:Support:Oper Sys & Data Com	3
10-154-190	IT:Support:Help Desk/User Sup	2
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
	SEMESTER TOTAL	17

THIRD SEMESTER

10-102-100	Bus and Info Tech Occup Prep	1
10-107-194	IT:Documentation	2
10-150-163	IT:Network:Cisco 1	3
OR		
10-150-165	IT:Network:Microsoft Server 1	3
10-154-125	IT:Web:Database Development	3
10-154-157	IT:Support:Advanced Projects	3
10-154-171	IT:Support:Integration-VBA	3
10-809-172	Intro to Diversity Studies	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-107-195	IT:Training	2
10-152-184	IT:Web:Programming-SQL	3
10-152-185	Website Coding	3
10-154-199	IT:Support: Intern Practicum	2
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
	SEMESTER TOTAL	16
	TOTAL CREDITS	70

CURRICULUM NOTE

A student desiring a strong financial background or a student planning to double major in Accounting is advised to substitute the four credit Accounting 1 (10-101-110) for the three-credit Accounting for Non-Accountants (10-101-106). To discuss this further, please contact an NWTC counselor or academic advisor.

*Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-107-194 IT:DOCUMENTATION ...plan documentation content and delivery methods; develop online, context-sensitive written documentation, become familiar with ISO 9000 standards, package PDF files, and create compiled help modules. Proficiency using Word required. (Prerequisite: 10-801-136, English Composition 1 or equivalent)

10-107-195 IT:TRAINING ...effective presentation skills, plan training content and delivery methods, write lesson plans, provide training materials, conduct training sessions, and assess learners' grasp of stated objectives. (Prerequisites: 10-154-160, IT:Support:Software-Intro AND 10-154-150, IT:Support:Hardware-Intro)

10-150-163 IT:NETWORK:CISCO 1 ...cable characteristics and termination, structured cabling systems, OSI reference model, IP addressing and subnetting, network architectures and basic protocols, Ethernet switches, basic router operation and configuration.

10-150-165 IT:NETWORK:MICROSOFT SERVER 1 ...Microsoft Server OS administration and implementation. Learner will install and configure the OS, Active Directory, Group Policies, IIS and security. (Prerequisite: 10-150-174, IT:Network:Client Operating Systems)

10-150-174 IT:NETWORK:CLIENT OPERATING SYSTEMS ...basic OS functions; memory, CPU, device/file management techniques, OS installation/configuration; configuration of I/O and storage devices; basic network connectivity; standard system maintenance procedures; command line introduction and batch file writing.

10-152-163 IT:PROGRAM:VISUAL BASIC ...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs are covered. (Prerequisites: 10-150-174, IT:Network:Client Op Sys; 10-154-160, IT:Support:Software-Intro; 10-804-133, Math & Logic)

10-152-184 IT:WEB:PROGRAMMING-SQL ...write queries in a relational database: creating tables, setting primary/foreign keys, populating tables, manipulating data and reporting. Explore join types, stored procedures, functions, and database administration SQL statements. (Prerequisite: 10-154-125, IT:Web:Database Development)

10-152-185 WEBSITE CODING ...create code for generating the structure, function, and design of static websites using standards-based HTML5 and CSS3; validate code; test multi-browser and multi-device functionality.

10-154-125 IT:WEB:DATABASE DEVELOPMENT ...database uses, database terminology, analyzing information requirements, data models, database design phases, entity relationships, normalization processes, database management systems, database objects, development environments, creating tables, writing queries using SQL, testing.

10-154-150 IT:SUPPORT:HARDWARE-INTRO ...computer network terminology, component identification, POST, computer/peripheral configuration and maintenance, basic operating systems concepts and installations, basic networking concepts and configurations and troubleshooting using the Cisco IT Essentials curriculum.

10-154-153 IT:SUPPORT:OPERATING SYSTEMS AND DATA COMMUNICATION ...core OS operation, configuration of desktop/network OS, system security/audit policy, data communications, network topologies, convergence technologies, mobile applications, virtual desktop management and advanced scripting. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-157 IT:SUPPORT:ADVANCED PROJECTS ...PC hardware, software, O.S. configuration, maintenance, I.T. resources, malware, bootable and unattended install media, data backups, disaster recovery plans, troubleshooting, virtualization, RAID storage , server farm build, emerging technologies. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-160 IT:SUPPORT:SOFTWARE-INTRO ...an introductory course for the Computer Support Specialist program and covers the fundamental capabilities and functions of Word, PowerPoint, Excel, Email correspondence, Internet search engines, and file compression.

10-154-171 IT:SUPPORT:INTEGRATION-VBA ...using Visual Basic for Applications to automate operations of the object models for Microsoft Word, Excel, PowerPoint, Access, and Outlook; integration of these applications/objects; fundamental programming constructs and data manipulations. (Prerequisites: 10-154-160, IT:Support:Software-Intro; 10-152-163, IT:Program:Visual Basic)

10-154-190 IT:SUPPORT:HELP DESK/END USER SUPPORT ...describe the role of the help desk in technology support, use terminology, processes, and tools, and demonstrate the use of business, technical, communication, and self-management skills required for help desk support professionals.

10-154-199 IT:SUPPORT: INTERN PRACTICUM ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-133, Math & Logic; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Computer Support Technician
IT Program Code 311546 | Technical Diploma

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Computer Support Technician - IT emphasizes problem solving using microcomputer hardware and software facilities including command line environment and Windows operating systems, Microsoft Word, and Microsoft Excel.

Program Outcomes

- Develop attractive and effective slide shows using PowerPoint presentation software.
- Develop professional letters and reports using Word document processing software.
- Develop professional and user-friendly spreadsheets using Excel spreadsheet software.
- Develop computer programs to perform common business functions using the Visual BASIC programming language.
- Perform common help desk and end-user support functions using current technologies and protocols.
- Install, configure, and maintain computer hardware and peripherals.
- Perform basic computer system functions and operations using the command line and shell scripts.
- Configure and administer common microcomputer operating systems.
- Automate Windows operations using common operating system scripting languages.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- One year of high school algebra completed.
- Ability to use computer keyboard and mouse.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Reading Comprehension: 55; Sentence Skills: 75; Arithmetic 65. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

IT Consultant: provides one-on-one problem solving for users.

Computer Sales Representative: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

With additional education and/or work experience, graduates may find other opportunities for employment.

- IT Trainer
- Network Assistant

Note
This can also be the first year of the two-year Computer Support Specialist - IT program on the Green Bay campus.

The following certificates/technical diplomas may be applied toward this program:
- 901542, Computer Support Certificate

Curriculum

Students following the study plan below will complete the Computer Support Technician technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-154-160	IT:Support:Software-Intro	3
*10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
**10-890-101	College 101	1
SEMESTER TOTAL		**19**

SECOND SEMESTER		
10-102-158	Business-Introduction	3
10-152-163	IT:Program:Visual Basic	3
10-154-153	IT:Support:Oper Sys & Data Com	3
10-154-190	IT:Support:Help Desk/User Sup	2
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**36**

CURRICULUM NOTE

* Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-150-174 IT:NETWORK:CLIENT OPERATING SYSTEMS ...basic OS functions; memory, CPU, device/file management techniques, OS installation/configuration; configuration of I/O and storage devices; basic network connectivity; standard system maintenance procedures; command line introduction and batch file writing.

10-152-163 IT:PROGRAM:VISUAL BASIC ...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs are covered. (Prerequisites: 10-150-174, IT:Network:Client Op Sys; 10-154-160, IT:Support:Software-Intro; 10-804-133, Math & Logic)

10-154-150 IT:SUPPORT:HARDWARE-INTRO ...computer network terminology, component identification, POST, computer/peripheral configuration and maintenance, basic operating systems concepts and installations, basic networking concepts and configurations and troubleshooting using the Cisco IT Essentials curriculum.

10-154-153 IT:SUPPORT:OPERATING SYSTEMS AND DATA COMMUNICATION ...core OS operation, configuration of desktop/network OS, system security/audit policy, data communications, network topologies, convergence technologies, mobile applications, virtual desktop management and advanced scripting. (Prerequisites: 10-150-174, IT:Network:Client Op Sys;10-154-150, IT:Support:Hardware-Intro)

10-154-160 IT:SUPPORT:SOFTWARE-INTRO ...an introductory course for the Computer Support Specialist program and covers the fundamental capabilities and functions of Word, PowerPoint, Excel, Email correspondence, Internet search engines, and file compression.

10-154-190 IT:SUPPORT:HELP DESK/END USER SUPPORT ...describe the role of the help desk in technology support, use terminology, processes, and tools, and demonstrate the use of business, technical, communication, and self-management skills required for help desk support professionals.

10-804-133 MATH & LOGIC ...students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases. (Prerequisites: Accuplacer-Arithmetic score=65 or ACT-Math score=15 or 10-834-109, Pre Algebra AND Accuplacer-Reading=55 or ACT-Reading=15 or 10-838-105, Intro to Reading & Study Skills with "C" or better OR equivalent)

Construction Technology   Program Code 104752 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Construction Technology associate degree provides the learner with entry level skills in one of three areas of emphasis all under one program umbrella. Students can choose to emphasize in Structural, Electrical, or Mechanical Systems. Students completing the associate degree will gain skills in project management, lean operations and sustainable building practices and with experience which may lead to a management position. Credits from the following technical diplomas (Electrical Systems, Mechanical Systems, Structural Systems) can be applied to this associate degree program.

Program Outcomes

- Interpret basic blueprints.
- Verify quality control and workmanship metrics of production work.
- Perform safe work practices.
- Apply lean principles to solve construction related problems.
- Perform technical calculations and produce drawings for mechanical, electrical and plumbing systems.
- Produce structural drawings and details for residential and commercial buildings.
- Explain the design and construction process.
- Display a positive attitude toward the profession.
- Apply mathematical principles, codes, manufacturer's standards, tables, and technical manuals in the design and production of construction documents.
- Choose appropriate materials for use in building construction.
- Estimate materials required for construction.
- Apply sustainable principles to building construction.
- Apply project management skills.
- Communicate with co-workers and supervisors.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Carpenter Helper: assist a Carpenter in all areas of building construction; installs interior and exterior finish surface materials, interior floor and ceiling specialties, rough framing, building layout, stair construction, and interior trim.

Mason Helper: assists a Mason in laying brick and/or other types of masonry to construct foundations, walls, fireplaces, smokestacks, arches and similar structures.

Plumber Helper: assists a Plumber in installing and maintaining water/plumbing systems in residential and industrial applications.

Electrician Helper: assists an Electrician in installing and servicing conduit, wire, cable, and equipment in new and existing residential, commercial, and industrial structures.

General Laborer: performs basic yet important physical work tasks at building construction sites.Note
This can also be the first year of the two-year Computer Support Specialist - IT program on the Green Bay campus.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Potential fast track to leadership positions
- Carpenter
- Mason
- Plumber
- Electrician
- HVAC/R Technician

The following certificates/technical diplomas may be applied toward this program:
- 31-413-1, Electrical Systems
- 31-475-5, Mechanical Systems
- 31-475-4, Structural Systems

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-182-111 LEAN OPERATIONS ...understanding of materials and operations management, systems approach, productivity attainment, forecasting, quality management, quality control, six sigma methodologies, process configuration, process analysis and process redesign.

10-196-188 PROJECT MANAGEMENT FUNDAMENTALS ...the role of project management, developing a project proposal, demonstration of relevant software, working with project teams, sequencing tasks, charting progress, dealing with variations, budgets and resources, implementation, and assessment.

10-403-101 BLUEPRINT READING 1 ...drawing development/equipment, blueprints, plot and building layout, scaling and dimensioning practices, symbols, specs, codes, materials and uses.

10-403-102 BLUEPRINT READING 2 ...blueprints as they relate to the mechanical trades and applied specifications and codes to blueprints; emphasis on residential and commercial. (Prerequisite: 10-403-101 Blueprint Reading 1)

10-408-100 MASONRY ...this course will give students basic understanding of mason trades with emphasis on brick, cement and safety for the trade. Careers in masonry will also be discussed.

10-410-101 SITE DEVELOPMENT ...students will understand the basics of building layout including heights and surveying and what the start-up phase in construction entails.

10-410-102 FOOTING SYSTEMS ...footings with an emphasis on construction and different types of footings; layout and format are also included. (Corequisite: 10-410-101, Site Development)

10-410-103 FOUNDATION SYSTEMS ...foundation walls with an emphasis on the construction of foundation walls, different types of foundations (block, concrete, wood), insulation and water proofing of foundation walls. ICF will also be covered. (Corequisites: 10-410-101, Site Development; 10410102, Footing Systems)

10-410-104 FLOOR FRAMING SYSTEMS ...this course teaches all aspects of floor construction and flooring system construction. (Corequisites: 10-410-101 Site Development; 10-410-102 Footing Systems; 10410103, Foundation Systems)

10-410-105 WALL FRAMING SYSTEMS ...this course will cover wall building and wall systems from standard wood or metal framing to tip-up pre-cast panels. (Prerequisite: 10-410-104, Floor Framing Systems)

10-410-106 ROOF & CEILING FRAMING SYSTEMS ...course will encompass all roof and ceiling systems from trusses to steel to pre-cast concrete. (Corequisite: 10-410-105, Wall Systems)

10-410-107 STAIR SYSTEMS ...the stair framing course will encompass all aspects of stair construction. (Corequisites: 10-410-105, Wall Systems; 10-410-106, Roof & Ceiling Framing Systems)

10-410-108 UNIFORM BUILDING CODE ...this course will teach the basic requirements for the erection of buildings inhabited by the public for living, work and pleasure.

10-410-109 MATERIAL ESTIMATING ...perform material and labor cost estimates of building foundations, floor systems, superstructures, and exterior and interior finish systems.

10-413-102 RESIDENTIAL ELECTRICAL CODE 1 ...National Electrical Code, residential circuits, conductor sizes, branch circuits, box fill calculations, switch control, branch circuit overcurrent protection and calculations, and ground fault circuit interrupters.

10-413-103 RESIDENTIAL ELECTRICAL CODE 2 ...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 10-413-102, Residential Electrical Code 1)

10-413-104 INDUSTRIAL CODE ...three-phase and single-phase systems, motor branch circuits, overcurrent and overload protections, power factor, hazardous locations, harmonics and National Electric Code. (Prerequisites: 10-413-102, Residential Elec Code 1; 10-413-103, Residential Elec Code 2; Corequisite: 10-413-105, Commercial Elec Code)

10-413-105 COMMERCIAL ELECTRICAL CODE ...commercial building plans and specifications, computing electrical loads and branch circuits, emergency systems, raceways, conduit fill, power and lighting circuits, motor & appliance circuits. (Prerequisite: 10-413-103, Residential Electrical Code 2)

10-413-112 ELECTRICITY-BASIC ...this course introduces the fundamental concepts of electricity and electron flow. Emphasis is placed on Ohm's law, magnetism as it relates to electricity, DC/AC circuits, electrical components, operations of test equipment, and electrical safety precautions.

31-413-303 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control (Corequisite: 10-413-345, Industrial Code)

10-413-304 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Corequisite: 10-413-303, Industrial Controls)

10-413-314 DC CIRCUITS ...electron theory, electromotive force sources, voltage, current, resistance, power, Ohm's Law, series-parallel circuits and test equipment. (Corequisites: 31-804-312, Math-Algebra/Trades; 10-413-317, Fundamentals of Electricity)

10-413-317 FUNDAMENTALS OF ELECTRICITY ...atomic structure, electrical quantities, Ohm's Law, magnetism, AC concepts. (Corequisite: 31-804-312, Math-Algebra/Trades)

10-413-319 RESIDENTIAL WIRING 1 ...residential electrical installation, national electrical code applications, residential circuits, box selection, conductor selector, receptacles, GFCI protection and switch control. (Corequisite: 10-413-102, Residential Elec Code 1, 10-449-112, OSHA 30)

10-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low-voltage wiring. (Corequisite: 10-413-105, Commercial Electrical Code OR 31-448-364, Marine Electrical Codes)

10-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Corequisite: 10-413-334, AC Circuits)

10-413-329 RESIDENTIAL WIRING 2 ...residential circuit installations, National Electrical Code, application of residential design and layout, small appliance circuits and special purpose outlets. (Corequisites: 10-413-319, Residential Wiring 1; 10-413-103, Residential Electrical Code 2, 10-449-112, OSHA 30)

10-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, diodes and silicon controlled rectifiers. (Corequisites: 10-413-314, DC Circuits, 31-804-312, Math-Algebra Trades)

10-442-161 GAS METAL ARC WELDING ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welding in the flat and horizontal positions, fillet, pipe to plate and groove welds on plain carbon steel. (Corequisite: 10-442-162, Material Cutting Applications)

10-442-162 MATERIAL CUTTING APPLICATIONS ...visual inspection of weld and cut edges, manual and machine oxy fuel gas cutting, air carbon arc cutting, plasma arc cutting, and mechanical cutting methods.

10-449-112 OSHA 30 ...addresses OSHA 29CFR1926 rules and is approved by OSHA for construction workers, foremen, job supervisors, and anyone involved in construction trades. Successful participants receive 30-hour card from OSHA.

10-462-100 MECHANICAL POWER TRANSMISSION ...students will learn how power moves through machines to accomplish the necessary tasks. (Corequisites: 10-462-101, Bearings; 10-462-103, Couplings & Alignment; 10-462-110, Preventive Maintenance)

10-462-101 BEARINGS ...students will examine bearing types and applications and compare equipment bearings. Students will also develop skills related to bearing inspection, selection, removal, mounting, lubricating, and diagnosing failure. (Corequisite: 10-462-110, Preventive Maintenance)

10-462-102 FABRICATION AND LAYOUT ...course compares types of sheet metal, tools and uses. Students will develop skills related to the fabrication and erection of steel products. Students will work from drawing through layout and alignment and demonstrate the safe and proper use of any and all necessary tools and equipment. (Corequisites: 10-462-111, Blueprint Reading: 10-462-104, Equipment Installation)

10-462-103 COUPLINGS AND ALIGNMENT ...course compares different coupling types and examines common misalignment problems. Students will develop skills related to inspecting, troubleshooting and preparing couplings for removal and installation. (Corequisite: 10-462-110, Preventive Maintenance)

10-462-104 EQUIPMENT INSTALLATION ...students will layout equipment installations, plan for moving equipment and set and level equipment. (Corequisites: 10-462-111, Blueprint Reading; 10-462-102, Fabrication & Layout; 10-462-105, Rigging Systems)

10-462-105 PIPING AND WATER SYSTEMS ...students will analyze flow characteristics in piping systems, relate pipe sizing to requirements and apply the correct piping to related situations.

10-462-106 HVAC BASICS ...heating, ventilation and air conditioning technology provides students with the basics to control air flow in respect to heating and cooling structures.

10-462-107 INPUT/OUTPUT DEVICES ...this course examines the devices used in control circuits. Students will identify pushbuttons, rotary switches, limit switches, proximity switches, photoelectric switches, relays, motor starters, and annunciators. Emphasis will be placed on proper installation and troubleshooting. (Corequisites: 10-413-112, Basic Electricity; 10-462-108, Motor Control Circuits)

10-462-108 MOTOR CONTROL CIRCUITS ...this course presents the students with common designs of motor control circuits. Students will design multiple circuits that will start, control the speed, reverse, brake, and stop motors. (Corequisite: 10-413-112, Basic Electricity; 10-462-107, Input/Output Devices)

10-462-109 PUMPS & COMPRESSORS ...this course compares different pump types and their applications. Students will complete a field inspection of pumps and learn how to troubleshoot, remove, overhaul, install and perform preventative maintenance on pumps.

10-462-110 PREVENTIVE MAINTENANCE ...this course examines both preventive and predictive maintenance concepts as they apply to mechanical work processes and machine maintenance. Students will develop skills related to assessing machine conditions and equipment breakdowns using correct troubleshooting procedures. (Corequisites: 10-462-101, Bearings; 10-462-103, Couplings & Alignment; 10-462-100, Mechanical Power Transmission)

10-462-111 BLUEPRINT READING ...this course explores all elements of engineering and manufacturing technology print reading from sketching methods and measurement techniques to reading specialty prints. Students develop skills in print reading, visual perception, technical communication, and problem solving. It includes the fundamentals of orthographic projection, dimension techniques, welding and electrical symbols, and section views.

10-607-107 SURVEY/SITE DEVELOPMENT ...transit/level use, note keeping, bearings and azimuths, distance measurement, contour maps, stadia, legal descriptions, public land subdivision, construction surveys, site plans, zoning ordinances, easements, and parking lot/street layout.

10-614-113 2D ESSENTIALS ... an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning.

10-614-211 ARCHITECTURAL REVIT INTRO ...introduces the parametric design software Autodesk Revit used for building information modeling. Basic design and documentation tools will be employed. A simple building design will be modeled that matches given specifications.

10-614-213 BUILDING MATERIALS ...considers material properties, processes of manufacture, installation procedures and performance. Construction methods, building systems and products will be evaluated. Materials will be analyzed and classified based on the Construction Specifications Institute Master Format.

10-614-214 Building Green Introduction ...summarizes the history, technology and science underlining sustainable building practices. The human factor and the economics of sustainability will be discussed. Alternative energy including wind, solar, photovoltaic, geothermal and fuel cells will be researched.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging systems.

10-890-101 COLLEGE 101 ...develops tools and strategies that support success in college. Focuses on study skills, college resources, goal setting, time management, and learning styles. Introduces concepts for self assessing learning and completing an Exit Assessment that provides evidence that learning took place. Students should take this course prior to or during the first semester of their programs.

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Lakeshore Technical College.

Program Description
You've seen high profile trials with a person keying the testimony into a stenograph machine or read the scrolling captions for the hearing-impaired on your TV screen. The person recording the spoken words at speeds ranging from 180 to 225 words a minute is a court reporter. If you're an excellent listener, have strong language and communications skills, and are committed to accuracy and confidentiality, a career in court reporting may be a perfect fit for you.

Program Outcomes
• Develop proficiency in machine shorthand using realtime theory.
• Develop a personal dictionary, read, translate, and edit transcripts using CAT (computer-aided transcription) software.
• Produce salable transcripts on a realtime translation system.
• Demonstrate knowledge of proper reporting procedures and responsibilities for freelance and official reporting.
• Demonstrate knowledge of legal and medical concepts and terminology.
• Demonstrate knowledge of the professional reporting organizations and methods of gaining certification as a Registered Professional Reporter.

Requirements for Program Entry
• Court Reporting is a collaborative program between LTC and NWTC. Application for this program must be completed through LTC.

Employment Potential
A graduate of the program will have potential for employment in the following areas:
• Legislative Reporter
• Official Court Reporter in the Court System
• Freelance Reporter
• Scopist

About Shared Programs
LTC offers its Court Reporting program in cooperation with technical colleges across the state. As a court reporting student, you'll:
• Attend live, interactive ITV classes sent from LTC to NWTC.
• Take general studies classes and labs at your local technical college.

Curriculum
Court Reporting is a collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon graduation, a student will have completed 65 credits.

FIRST SEMESTER		CREDITS
10-170-106	Realtime Reporting I	5
10-170-144	Realtime Reporting Orientation	1
10-170-160	Legal Terminology	1
10-170-184	English for Realtime Reporters	1
10-170-804	Realtime Reporting I Lab	1
10-801-136	English Composition 1	3
OR		
*10-801-195	Written Communication	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		15

SECOND SEMESTER		
10-170-105	Realtime Reporting II	5
10-170-159	Realtime Reporting Technology	2
10-170-805	Realtime Reporting II Lab	1
10-801-196	Oral/Interpersonal Comm	3
OR		
10-801-198	Speech	3
10-809-172	Intro to Diversity Studies	3
OR		
10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		17

SUMMER SEMESTER		
10-170-108	Realtime Reporting Speed Dev	2
SEMESTER TOTAL		2

THIRD SEMESTER		
10-170-109	Literary I-Advanced	2
10-170-128	Jury Charge I-Advanced	2
10-170-156	Testimony I -Advanced	3
10-170-809	Literary I Lab-Advanced	1
10-170-828	Jury Charge I Lab-Advanced	1
10-170-859	Testimony I Lab-Advanced	1
10-804-123	Math w Business Apps	3
OR		
*10-804-106	Intro to College Math	3
OR		
10-806-112	Principles of Sustainability	3
10-809-195	Economics	3
OR		
*10-809-144	Macroeconomics	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-170-111	Literary II-Advanced	2
10-170-129	Jury Charge II-Advanced	2
10-170-141	Court Reporting Procedures	2
10-170-145	Court Reporting Internship	1
10-170-157	Testimony II-Advanced	3
10-170-171	Medical Reporting/Terminology	2
10-170-811	Literary II Lab-Advanced	1
10-170-829	Jury Charge II Lab-Advanced	1
10-170-857	Testimony II Lab-Advanced	1
SEMESTER TOTAL		15
TOTAL CREDITS		65

CURRICULUM NOTE
*Course offered only at Lakeshore Tecnical College.

Optional Credits: Beginning Courses Required Prior to Advanced Courses

10-170-161	Realtime Rptg Technology Adv	
10-170-121	Jury Charge I-Beginner	
10-170-826	Jury Charge I Lab-Beginner	
10-170-122	Jury Charge II-Beginner	
10-170-827	Jury Charge II Lab-Beginner	
10-170-113	Literary I-Beginner	
10-170-808	Literary I Lab-Beginner	
10-170-114	Literary II-Beginner	
10-170-810	Literacy II Lab-Beginner	
10-170-153	Testimony I-Beginner	
10-170-858	Testimony I Lab-Beginner	
10-170-154	Testimony II-Beginner	
10-170-855	Testimony II Lab-Beginner	

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-170-105 REALTIME REPORTING II ...prepares the learner to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet;" apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent registration in Realtime Reporting 2 Lab is required.

10-170-106 REALTIME REPORTING I ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting 1 Lab is required. CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting or 101061 Judicial Reporting program requirements met.

10-170-108 REALTIME REPORTING SPEED DEVELOPMENT ...further develops skills acquired in Realtime Reporting 2 on literary, jury charge, and testimony material beginning at 120 wpm. Scheduled during the summer term, students must pass two, 3-minute timings at a minimum speed of 110 words per minute. (Prerequisite: 10170105, Realtime Reporting 2 or 10106105 Realtime Reporting 2)

10-170-109 LITERARY I-ADVANCED ...prepares the learner to write literary material at 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. Concurrent registration in Literary I Lab-Advanced is required. (Prerequisite: 10170113 Literary 1-Beginner or 10106113 Literacy 1-Beginner or CONDITION: Minimum of 130 WPM met)

10-170-111 LITERARY II-ADVANCED ...prepares the learner to write literary material at 180 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy, write and read back current events dictation, and prepare salable transcripts. (Concurrent registration in Literary II Lab-Advanced is required. (Prerequisite: 10170114 Literary 2-Beginner or 10106114 Literary 2-Beginner)

10-170-128 JURY CHARGE 1-ADVANCED ...prepares the student to write jury charge material at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. (Concurrent registration in Jury Charge I Lab-Advanced is required.) Prerequisite: 10170121, Jury Charge 1-Beginner or 10106121, Jury Charge 1-Beginner or CONDITION: Minimum of 130 WPM met.

10-170-129 JURY CHARGE II-ADVANCED ...prepares the learner to write jury charge material at 200 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Jury Charge II Lab-Advanced is required. (Prerequisite: 10170122 Jury Charge 2-Beginner or 10106122 Jury Charge 2-Beginner or CONDITION: Minimum of 180 WPM met.)

10-170-141 COURT REPORTING PROCEDURES ...introduces the student to reporting procedures for which reporters are responsible in the courtroom, deposition, and real-time reporting environments, including preparing salable transcripts, researching legal citations, and developing professional development plans.

10-170-144 REALTIME REPORTING ORIENTATION ...prepares the student to use computer-assisted, real-time transcription software, Windows, e-mail, a steno machine, and a laptop in writing machine shorthand in court reporting and to complete and submit required coursework. CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting program requirements met.

10-170-145 CONCURRENT COURT REPORTING INTERNSHIP ...prepares the student to write machine shorthand verbatim for a minimum of 40 hours of actual writing time in the courtroom, classroom, and deposition environment under the supervision of a working reporter; prepare a 40-page transcript, and summarize the internship experience in a narrative report. (Prerequisite: 10106108 or 10170108 Realtime Rptg Speed Dev.,10106128 or 10170128 Jury Chrg 1-Adv., 10106109 or 10170109 Lit 1-Adv, 10106156 or 10170156 Test 1-Adv & Corequisite: 10106129 or 10170129 Jury Chrg 2-Adv., 10106111 or 10170111 Lit 2-Adv., and 10106157 or 10170157 Test 2-Adv)

10-170-156 TESTIMONY I-ADVANCED ...prepares the student to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. (Concurrent registration in Testimony I Lab-Advanced is required.) Prerequisite: 10170153 Testimony 1-Beginner or 10106153 Testimony 1-Beginner or CONDITION: or Minimum of 130 WPM met.

10-170-157 TESTIMONY II-ADVANCED ...prepares the learner to write 2-voice testimony material at 225 words per minute for 5 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy and prepare salable transcripts. Concurrent registration in Testimony II Lab-Advanced is required. (Prerequisite: 10170154 Testimony 2-Beginner or 10106154 Testimony 2-Beginner or CONDITION: Minimum of 190 WPM met)

10-170-159 REALTIME REPORTING TECHNOLOGY ...prepares the student to use CAT (Computer-Assisted Transcription) and real-time software; build personal dictionaries; and read, translate, and edit transcripts. Students are introduced to real-time translation procedures in court, depositions, captioning, and educational environments.

10-170-160 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-170-171 MEDICAL REPORTING & TERMINOLOGY ...prepares the student to write medical terminology in machine shorthand using appropriate medical terminology from material dictated at a minimum speed of 150 wpm for 5 minutes with a minimum of 95 percent accuracy. The student will research medical information, prepare salable transcripts, and submit timings. (Prerequisite: 10170156 Testimony 1-Adv or 10106156 Testimony 1-Adv)

10-170-184 ENGLISH FOR REALTIME REPORTERS ...enhances the student's ability to use proper English grammar, spelling, punctuation, capitalization, and vocabulary techniques in the transcription of the spoken word.

10-170-804 REALTIME REPORTING I LAB ...prepares the learner to use machine shorthand to write consonants, vowels, numbers, multi-syllabic words, multi-consonant words, punctuation and special symbols, short forms and phrases, words in their singular and plural forms, and prefixes and suffixes. Concurrent registration in Realtime Reporting I is required. Corequisite: 10170106 Realtime Reporting 1 or 10106104 Realtime Reporting 1 and CONDITION: 101701 Broadcast Captioning or 101702 Court Reporting or 101061 Judicial Reporting program requirement met.

10-170-805 REALTIME REPORTING II LAB ...expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffixes; numbers, frequently used words and phrases, contractions using the Z-rule, the "Flagged Alphabet;" apply realtime conflict elimination principles; apply realtime theory and write dictation using a realtime theory. Concurrent registration in Realtime Reporting 2 is required. (Corequisites: 10170105 Realtime Reporting 2 or 10106105 Realtime Reporting 2)

10-170-809 LITERARY I LAB-ADVANCED ...expands the student's ability to write literary material dictated at a speed of 150 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170109, Literary I-Advanced or 10106109, Literary 1-Advanced)

10-170-811 LITERARY II LAB-ADVANCED ...expands the student's ability to write literary material at 180 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Literary II-Advanced is required. (Corequisite: 10170111 Literary 2-Advanced or 10106111 Literary 2-Advanced or minimum of 160 WPM met)

10-170-828 JURY CHARGE I LAB-ADVANCED ...prepares the student to write jury charge material dictated at a speed of 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170128, Jury Charge I-Advanced or 10106128, Jury Charge 1-Advanced)

10-170-829 JURY CHARGE II LAB-ADVANCED ...expands the student's ability to write jury charge material at 200 words per minute for 5 minutes and transcribe at least three timings with 95 percent accuracy. Concurrent registration in Jury Charge II-Advanced is required. (Corequisite: 10170129 Jury Charge 2-Advanced or 10106129 Jury Charge 2-Advanced)

10-170-857 TESTIMONY II LAB-ADVANCED ...expands the student's ability to write 2-voice testimony at 225 words per minute and transcribe with 95 percent accuracy a minimum of three, 5-minute, 2-voice timings at 225 words per minute; complete a mock RPR Exam. Concurrent registration in Testimony II-Advanced is required. (Corequisite: 10170157 Testimony 2-Advanced or 10106157 Testimony 2-Advanced)

10-170-859 TESTIMONY I LAB-ADVANCED ...expands the student's ability to write 2-voice testimony at 160 words per minute for 3 minutes and transcribe at least 3 timings with a minimum of 95 percent accuracy. (Corequisite: 10170156, Testimony I-Advanced or 10106156 Testimony 1-Advanced)

10-804-106 INTRODUCTION TO COLLEGE MATH ...an introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Credit Business Management prepares learners for careers in credit management. The learners will comprehend the concepts of leadership, demonstrating promotion, control, and collection of consumer and business transactions.

Program Outcomes
- Adhere to internal credit policies and procedures.
- Process credit applications.
- Conduct credit investigations.
- Analyze business and consumer financial statements.
- Make credit decisions.
- Use credit related documents.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Resolve collection issues/problems.
- Resolve discrepancies in customers' accounts.
- Assess how economic policies and changes in the level of business activity affect the credit industry.
- Deliver effective customer service.
- Evaluate the performance of a credit department.
- Demonstrate state and federal laws.
- Manage the work of other people in a team environment.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Perform basic business math calculations.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Basic math.
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is

necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment in the following areas:

Credit Manager Trainee: learns all phases of operating a business or financial institution credit department, usually in preparation for a management position.

Assistant Credit Manager: assists a department or branch manager in all phases of operation, including the extension, collection, and control of credit.

Credit Specialist: supports the credit process in the application of cash receipts, collection calls, and problem resolution.

Collection Specialist: contacts consumers or businesses to arrange payments and may become involved with legal aspects of collections.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Credit Manager
- Commercial Banker

Note
- Learners interested in double majoring in Accounting or Financial Institutions Management should consult with an instructor.
- Refer to the program website for information on accelerated learning and for helpful tips that will assist you

Curriculum
Students following the study plan below will complete the Credit Business Management associate degree in the number of semesters shown.

FIRST SEMESTER
Code	Course	CREDITS
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-114-111	Credit-Consumer	4
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		**18**

SECOND SEMESTER
Code	Course	CREDITS
10-102-150	Business Law & Ethics	3
10-105-102	Career Planning	2
10-114-109	Credit-Policies/Procedures	3
10-114-166	Credit-Collection Methods	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		**17**

THIRD SEMESTER
Code	Course	CREDITS
10-102-158	Business Principles	3
10-105-103	Career Preparation	1
10-114-101	Credit-Business Applications	3
10-114-170	Credit-Law	3
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**16**

FOURTH SEMESTER
Code	Course	CREDITS
10-114-181	Financial Statement Analysis	4
10-114-199	Credit-Career Experience	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
	Elective	1
SEMESTER TOTAL		**13**
TOTAL CREDITS		**64**

CURRICULUM NOTE
The courses beginning with course numbers 10-114-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students are expected to do most assignments outside of class time.

Core courses are primarily offered during the evening.

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES
Any course in the Financial Institutions Management or Accounting program.

in achieving the highest quality and most rewarding academic experience.

- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequisite: 10-103-131, Micro: Excel-Intro)

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-114-101 CREDIT-BUSINESS APPLICATIONS ...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, breakeven, depreciation, gain/loss, and inventory. (Prerequisite: 10-101-110, Accounting 1)

10-114-109 CREDIT-POLICIES AND PROCEDURES ...credit/collection policies, procedures, and law, credit investigations, evaluate credit worthiness, support credit decisions, create credit forms, fraud, bankruptcy, techniques to control and manage accounts receivable. (Prerequisite: 10-101-110, Accounting 1 or 10-101-106, Accounting for Non-Accountants)

10-114-111 CREDIT-CONSUMER ...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-114-166 CREDIT-COLLECTION METHODS ...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Corequisite: 10-114-167, Finance-Commercial Lending or 10-114-109, Credit-Policies/Procedures)

10-114-170 CREDIT-LAW ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-109, Credit-Policies/Procedures; 10-801-136, English Composition 1)

10-114-181 FINANCIAL STATEMENT ANALYSIS ...types of financial statements, analyze financial statements, research company data, perform industry research, examine SEC 10-K and annual report, and write financial analysis report. Highly recommended to be taken in the fourth semester or that the learner have applicable credit or accounting work experience. (Prerequisite: 10-101-110, Accounting 1)

10-114-199 CREDIT-CAREER EXPERIENCE ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Criminal Justice - Corrections
students relate theory to current
practice trends, problems, and
issues and also study correctional
counseling, sociology, and security.

Program Outcomes
- Analyze security procedures.
- Exercise interviewing techniques.
- Examine the state and
  federal court structure.
- Apply restraints.
- Outline the juvenile and adult
  criminal justice system.
- Prepare reports.
- Interpret correctional law.
- Summarize probation and
  parole procedures.
- Demonstrate oral communication skills.
- Compare numerous theories
  of criminal behavior.
- Contrast various components of
  the criminal justice system.
- Distinguish numerous functions
  of community corrections.
- Identify the components that
  comprise corrections.
- Summarize the administrative
  and managerial functions within
  the correctional system.
- Be eligible to become a state
  certified jail officer.
- Apply basic math skills.
- Demonstrate keyboarding
  and computer skills.
- Be eligible to become a state certified
  juvenile detention officer.

Requirements for Program Entry
- Completed application.
- Official high school transcript or
  equivalent. (For a list of equivalents,
  go to www.nwtc.edu/gettingstarted.)
- To be eligible to participate in
  core Criminal Justice courses,
  certification track students must have
  their student folder complete.
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic
  math skills (whole numbers, fractions,
  decimals, percents, and measurements).
- As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program Benchmarks are
  Arithmetic, 65; Reading Comprehension,
  55: Sentence Skills, 75. Students not
  meeting these benchmarks or the
  equivalent will be required to establish an
  individualized academic plan. Students may
  have the opportunity to enroll in selected
  program core courses while completing
  their individualized plan. Upon completion
  of the plan, students will be eligible for
  all program courses. However, higher test

scores will lead to greater success in core
program courses. To learn more about
these assessments and program benchmark
scores, please contact a counselor at
(920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will
have the potential for employment
in the following areas:

Correctional Officer: monitors, supervises,
and informally counsels inmates under his/
her control; works cooperatively with other
correctional staff; maintains order within
the facility; enforces rules and regulations;
searches inmates for contraband items such
as weapons or drugs; transports inmates;
mediates disputes between inmates; enforces
discipline; and reports verbally and in writing
about inmate conduct and the quality
and quantity of work done by inmates.

Youth Care Worker: monitors
the whereabouts and activities of
clients under his/her responsibility,
informally counsels, and guides proper
personality development of clients.

Secure Detention Worker: oversees and
monitors juveniles within a secure detention
facility, maintains order within the setting,
cooperates with staff and law enforcement
personnel, is responsible for oral and written
communications with a variety of agencies,
and is knowledgeable about federal and
state laws concerning juvenile rights.

Students Seeking a Certificate in
Community Corrections Can Also:
- Understand substance abuse.
- Compare numerous theories
  of offender treatment.
- Demonstrate methods of
  computer crime investigation.

Students Seeking a Certificate in Alcohol
& Other Drug Abuse Can Also:
- Identify and explain common
  purposes of group counseling.
- Plan and carry out a purposeful
  counseling group activity.
- Explore the personal and professional
  characteristics of the counselor.

Students Seeking a Certificate in Jail
and Juvenile Detention Can Also:
- Apply principles of subject control.
- Implement fire safety.

With additional education and/or work
experience, graduates may find other
opportunities for employment.
- Adult or Juvenile Administrator
- Institutional Case Worker
  or Social Worker
- Division of Community
  Corrections Agent
- Youth Counselor or Case Aide
- Youth Detention Home Supervisor

Note
- Students should be aware that a previous
  criminal record will limit their opportunity
  to gain successful employment.
- Wisconsin Training and Standards
  requires a completed criminal background
  check in order to successfully complete
  certifiability. Based upon results of
  the criminal background check, a
  student may be denied certifiability and

Curriculum
Students following the study plan
below will complete the Criminal
Justice-Corrections associate degree
in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-504-114	Police-Nutrition/Fitness	1
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-107	College Mathematics	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-197	Contemporary Amer Society	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-504-123	Correctional Institutions	3
10-504-132	Courts/Jurisdiction	3
10-504-153	Ethics - Criminal Justice	3
**10-504-900	Intro to Criminal Justice	3
**10-504-931	Communication Skills	3
**10-504-933	Correctional Report Writing	3
SEMESTER TOTAL		18

THIRD SEMESTER		
**10-504-128	PS-Job Interviews & Resume Writing	1
10-504-155	Community Corrections	3
10-504-172	Criminology	3
**10-504-932	Adult Supervision	3
**10-504-934	Correctional Law & Code	3
**10-504-937	Juvenile Supervision	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-504-171	Corrections Internship	2
**10-504-930	Security Procedures	3
**10-504-935	Corrections Summary Assessment	1
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
	**Elective	2
SEMESTER TOTAL		14
TOTAL CREDITS		65

CURRICULUM NOTE
*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

**Students enrolled in either of the Associate
Degree Criminal Justice programs planning to
become certifiable must complete core criminal
justice courses for the program within three years.
The clock starts for a college certification track
student on the first day the student enters into
a core criminal justice course. Students must
obtain a "C" or better in all of these classes.

SUGGESTED ELECTIVES
**Emergency Procedures, 10-504-936
Understanding Substance Abuse, 10-550-170
Fundamentals of Emergency Dispatch, 10-504-162

admission into or completion of the Jail
and Juvenile Detention Certificate.
- Students seeking the certifiable jail officer
  track must successfully complete 12 credits
  of specific courses within the program,
  complete the student folder and background
  check before being eligible to take the
  following certification requirement courses
  in conjunction with the Jail and Juvenile
  Detention Certificate: PS Job Interview &
  Resume Writing, 105-04-128; Corrections
  Internship, 10-504-171; Communication
  Skills 10-504-931; Emergency
  Procedures, 10-504-936; and Corrections
  Summary Assessment 10-504-935
- Due to Department of Justice - Training
  and Standards Bureau requirements,
  transfer of credits for core Criminal
  Justice courses will not be accepted.
  The exception to this would be if the
  courses are from another Wisconsin
  Technical College who is authorized as a
  certified Department of Justice - Training
  and Standards training academy.

COURSE DESCRIPTIONS
These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-504-114 POLICE-NUTRITION/
FITNESS ...the course will provide an
introduction to nutrition and eating correctly
for maximum value. Also, an introduction
to fitness for a criminal justice professional.

10-504-123 CORRECTIONAL
INSTITUTIONS ...the evolution of
punishment, development of prisons,
southern penal systems, the "Big House"
era, prisoner movement, inmate groups,
special offender groups, the female offender,
prison programs, prison services.

10-504-128 PS-JOB INTERVIEWS
& RESUME WRITING ... Students
will learn about the criminal justice
hiring process from application and
resume writing, oral interviews and the
background investigation. (Corequisite:
10-504-900, Intro to Criminal Justice)

10-504-132 COURTS/JURISDICTIONS
...development of the American judicial
system, the federal and Wisconsin court
structure, Wisconsin judicial rules and
procedures from complaint to sentencing as
they impact police or correctional officers.

10-504-153 ETHICS - CRIMINAL
JUSTICE ...in-depth study of ethical
philosophies and their application to
the Law Enforcement Officer's Code
of Ethics and professional performance
in the field. Topics include morality,
leadership, ethical decision-making, self-
actualization, ethics-based performance
and the breakdown of ethical conduct.

10-504-155 COMMUNITY
CORRECTIONS ...criminal justice system
stages, community-based corrections,
diversion programs, pre-trial release
programs, restitution, community service,
temporary release programs, halfway
houses, female offenders, drug and alcohol
abusing offenders, and juvenile programs.

10-504-171 CORRECTIONS
INTERNSHIP...training in criminal and
juvenile justice settings under supervised
observation and participation. (Corequisite:
10-504-900, Intro to Criminal Justice)

10-504-172 CRIMINOLOGY ...nature,
extent, and distribution of crime in the
United States; biological, psychological,
and sociological aspects of crime causation;
and legal and political implications
of crime prevention and control.

10-504-900 INTRO TO CRIMINAL
JUSTICE ...criminal justice, crime picture,
criminal law, theories of crime, history of
policing, police management, legal aspects,
courts, corrections, correction facilities.

10-504-930 SECURITY PROCEDURES
...steps involved in receiving and releasing
inmates and maintaining security, admission,
release and search procedures, use of jail
locking and surveillance equipment, inmate
health management, and mitigation of
hostage type situations. (Corequisite:
10-504-900, Intro to Criminal Justice)

10-504-931 COMMUNICATION
SKILLS ...apply correctional professional
skills including mediation, arbitration,
and crisis intervention in a correctional
setting. (Corequisite: 10-504-900,
Intro to Criminal Justice)

10-504-932 ADULT SUPERVISION
...practice supervision skills including
positive behavior control, dispute
resolution, and incident debriefing.
Explore belief systems, social pressure,
moral problems, decision-making and the
consequences of decisions. (Corequisite:
10-504-900, Intro to Criminal Justice)

10-504-933 CORRECTIONAL
REPORT WRITING ...learn basic
requirements, guidelines and skills for
proper and professional documentation of
activities and incidents in a correctional
setting. (Prerequisite: 10-801-136,
English Comp 1; Corequisite: 10-504-
900, Intro to Criminal Justice)

10-504-934 CORRECTIONAL LAW &
CODE ...concepts and principles underlying
legal requirements for jail operations and
guidelines for protecting the legal rights
of inmates, introduction to the role of the
jail officer, rules and standards governing
correctional operations, structure of the court
system, overview of civil liability, and key
constitutional rights of inmates. (Corequisite:
10-504-900, Intro to Criminal Justice)

10-504-935 CORRECTIONS SUMMARY
ASSESSMENT ...refine previously learned
skills and abilities by applying them to
various case studies and simulated
situations. (Corequisites: 10-504-900,
Intro to Criminal Justice;10-504-171,
Corrections Internship; 10-504-930, Security
Procedures; Prerequisites: all other 10-
504-XXX Corrections program courses)

10-504-937 JUVENILE SUPERVISION
...apply theories of adolescent
development to develop strategies for
effective supervision, protection, and
discipline of juveniles. (Corequisite: 10-
504-900, Intro to Criminal Justice)

Criminal Justice - Law Enforcement
Program Code 105041 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Criminal Justice - Law Enforcement students study the law enforcement field plus physical and behavioral sciences to meet the demands of the police profession, including criminal investigation, traffic law, patrol procedures, and scientific crime laboratory practices.

Program Outcomes

- Qualify for entry level positions in law enforcement.
- Write reports.
- Apply courtroom testimony techniques.
- Demonstrate knowledge of laws and principles of arrest, search, and seizure.
- Demonstrate understanding of relevant state statutes.
- Interpret selected theories of criminal behavior.
- Describe the structure and procedures of the court system.
- Describe the structure and procedures of the police organization.
- Describe the structure and procedures of corrections.
- Describe the structure and procedures of the juvenile system.
- Investigate an accident.
- Interview suspects and witnesses.
- Process a crime scene.
- Apply investigative techniques.
- Contrast the various police community relations programs.
- Make appropriate judgments on risk and other factors of police situations.
- Describe various patrol tactics.
- Contrast major social institutions within American society.
- Demonstrate effective communication skills.
- Apply basic math skills.
- Demonstrate basic computer skills.
- Students seeking certification can also: Operate vehicles in emergency situations. Demonstrate arrest, search, and seizure.

Requirements for Program Entry

- Completed application.
- Official high school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 65; Reading Comprehension,

55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Police Officer: performs general traffic and law enforcement duties at the municipal level.

Deputy Sheriff: performs general traffic and law enforcement duties, jailer, and telecommunications responsibilities at the county level.

DNR Officer: enforces fish, game, forest, and environmental laws at the state level.

State Trooper: performs traffic and law enforcement duties at the state level.

Military Law Enforcement Officer: performs criminal investigations, is responsible for traffic assignments, patrol, and general law enforcement duties in any branch of the military service at installations, forts, and bases.

Private Investigator: conducts criminal and noncriminal investigations for private businesses and industries.

Security Guard: patrols and investigates for retail business and private industrial plants.

Correctional Officer: is assigned to security and general duties in a correctional institution.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Police Administrator
- Chief Deputy
- State Agent
- Federal Agent
- Investigator
- K-9 Officer

Note
*Students enrolled in either of the Associate Degree Criminal Justice programs looking to become certifiable must complete core criminal justice courses for their program within three years. The clock starts for a college certification track student on the first day the student enters into a core criminal justice course.

These courses must be completed successfully within the 3-year time frame before a DOJ transcript can be submitted.

- Due to Department of Justice - Training and Standards Bureau requirements, transfer of credits for core Criminal Justice courses will not be accepted.

Curriculum

Students following the study plan below will complete the Criminal Justice-Law Enforcement associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-504-114	Police-Nutrition/Fitness	1
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-197	Contemporary Amer Society	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
**10-504-128	PS-Job Interviews & Resume Wri	1
10-504-132	Courts/Jurisdiction	3
10-504-153	Ethics - Criminal Justice	3
**10-504-900	Intro to Criminal Justice	3
**10-504-901	Constitutional Law	3
**10-504-903	Professional Communications	3
**10-504-905	Report Writing	3
SEMESTER TOTAL		19

THIRD SEMESTER		
10-504-143	Forensic Application	3
**10-504-902	Criminal Law	3
**10-504-904	Juvenile Law	3
**10-504-906	Criminal Investigation Theory	3
**10-504-907	Community Policing Strategies	3
**10-504-908	Traffic Theory	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-504-161	LE Summary Assessment	1
10-531-101	Emergency Response	1
10-801-198	Speech	3
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
	**Elective	3
SEMESTER TOTAL		14
TOTAL CREDITS		68

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

**Students enrolled in either of the Associate Degree Criminal Justice programs looking to become certifiable must complete core criminal justice courses for their program within three years. The clock starts for a college certification track student on the first day the student enters into a core criminal justice course. These courses must be completed successfully within the 3-year time frame before a DOJ transcript can be submitted. Students must obtain a "C" or better in all of these classes.

SUGGESTED ELECTIVES
**Tactical Operations, 10-504-173
**Driving Operations, 10-504-158
**Police Traffic Radar, 10-504-182
**Law Enforcement Internship, 10-504-176
**Scenario Assessment, 10-504-157
Fundamentals of Emergency Dispatch, 10-504-162
USCG Operator (OUPV) Near Coastal, 10-473-156
Navigation Rules of the Road 10-473-153
Master of Vessel 100 Gross Ton, 10-473-157

The exception to this would be if the courses are from another Wisconsin Technical College authorized as a certified Department of Justice - Training and Standards training academy.

- Students who want to be certifiable in Wisconsin must enroll in the Criminal Justice Law Enforcement - Advanced Standing Certificate.

The following certificates/technical diplomas may be applied toward this program:

- 905044, Criminal Justice Law Enforcement-Advanced Standing

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-504-114 POLICE-NUTRITION/ FITNESS ...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

10-504-128 PS-JOB INTERVIEWS & RESUME WRITING ... Students will learn about the criminal justice hiring process from application and resume writing, oral interviews and the background investigation. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-132 COURTS/JURISDICTIONS ...development of the American judicial system, the federal and Wisconsin court structure, Wisconsin judicial rules and procedures from complaint to sentencing as they impact police or correctional officers.

10-504-143 FORENSIC APPLICATION ...processing of crime scenes and use of forensic science in criminal investigations; emphasis on collection, preservation, and court presentation of fingerprint, firearm, impression, trace, body fluid, and document evidence. (Prerequisite: 10-504-906, Criminal Investigation Theory)

10-504-153 ETHICS - CRIMINAL JUSTICE ...in-depth study of ethical philosophies and their application to the Law Enforcement Officer's Code of Ethics and professional performance in the field. Topics include morality, leadership, ethical decision-making, self-actualization, ethics-based performance and the breakdown of ethical conduct.

10-504-161 LE Summary Assessment ...refine previously learned skills and abilities by applying them to various case studies and simulated situations. (Corequisite: 10-531-101, Emergency Response; Prerequisites: all other 10-504-XXX Law Enforcement program courses)

10-504-900 INTRO TO CRIMINAL JUSTICE ...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-901 CONSTITUTIONAL LAW ...arrest and search and seizure of persons, places, and things with or without warrant; cause and procedure to obtain and execute warrants; exclusionary rule and effects of illegal actions. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-902 CRIMINAL LAW ...criminal law characteristics; terminology, history, principles, and philosophy of criminal law; use of the Wisconsin Statute Book; and examination of selected criminal offenses and identifying elements. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-903 PROFESSIONAL COMMUNICATIONS ...process of criminal justice interviewing using basic skills model; use of nonverbal and verbal communication; security admissible confessions that preserve individual's constitutional rights; ethics in criminal justice interviewing. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-904 JUVENILE LAW ...as it relates to the field officer and the application of the law as it relates to juveniles in these situations. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-905 REPORT WRITING ...rationale and methods of law enforcement reporting, principles of effective report writing, organizing reports, writing operational law enforcement reports based on case studies. (Prerequisite: 10-801-136, English Comp 1; Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-906 CRIMINAL INVESTIGATION THEORY ...principles of criminal investigation; focus on techniques of an investigation from the preliminary investigation interview, evidence procedures, and specific crime investigation. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-907 COMMUNITY POLICING STRATEGIES ...in this course, the learner will identify community resources available in your area, describe the role of an advocacy group in the criminal justice community, demonstrate cultural self-awareness, interpret state and federal laws related to discrimination and diversity, utilize appropriate skills for interacting effectively and professionally with persons from culturally diverse backgrounds and lifestyles, identify and implement personal strategies that take into account cultural differences, identify the types of situations and the characteristics of individuals that are likely to be encountered in crisis management situations, apply Wisconsin statutory requirements and general guidelines regarding emergency detentions and emergency protective placements of persons, identify key concepts and elements associated with law enforcement response to people in crisis, apply crisis intervention principles and techniques, articulate the decision-making process taken to manage persons in crisis, incorporate community policing strategies into the community, illustrate problem-oriented policing strategies, evaluate other policing strategies, and apply principles of crime analysis and prevention. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-504-908 TRAFFIC THEORY ...in this course, the learner will enforce Wisconsin traffic laws, detect traffic violations, issue traffic citations, direct traffic, identify responsibilities of a first responding officer, manage the response to a scene, take necessary steps to enable effective follow-up as needed, conduct an initial investigation at a crash scene, identify the mechanics of measuring and documenting traffic crash scenes, complete the Wisconsin Motor Vehicle Accident Report, record the crash scene using photography, take appropriate enforcement action based on information gathered, and recognize and interpret indicators of impaired driving. (Corequisite: 10-504-900, Intro to Criminal Justice)

10-531-101 EMERGENCY RESPONSE ... legal/ethical issues, initial medical assessment, immediate treatment for a variety of injuries and medical conditions, CPR, defibrillation and response to hazardous materials. (Corequisite: 10-504-900, Intro to Criminal Justice)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description

The full-time Criminal Justice Law Enforcement Academy is a 17-credit, 592-hour, 13-week program designed to produce thoroughly competent and confident officers. Students learn the many skills of modern-day law enforcement and practice these skills in realistic environments. The realism afforded by our tactical facilities is unmatched in providing scenario-based training. Graduates of the Academy begin their career with an unparalleled level of professionalism as well as the ability to confront threats of terror to our homeland security.

The Academy faculty comprises a cross-section of full-time educators, law enforcement officers, supervisors and administrators who are established as leaders in law enforcement training. Staff members recognize they are role models of what is being taught and mentors to those attending.

Program Outcomes

- Will be certifiable as a law enforcement officer in the state of Wisconsin.

Requirements for Program Entry

- Completed application.
- An Associate Degree in Criminal Justice, 60 college credits at an associate's degree level or higher, or current employment with a sponsoring law enforcement agency.
- Self-sponsored applicants must complete an NWTC application, form DJ-LE-327 (with essays completed), physician's assessment and have official high school and college transcript(s) sent to the NWTC Public Safety Office. These candidates must also submit to a background check (at applicant's expense), physical fitness assessment and personal interview. Once accepted, these individuals must also complete a drug screen at their own expense.
- Currently employed officers must complete the NWTC application and provide contact information for their agency training officer who will be required to submit a copy of the officer's DJ-LE-303 form and complete additional paperwork. For further details on the application process for employed officers, contact the NWTC Public Safety Department at (920) 491-2627.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Police Officer: performs general traffic and law enforcement duties at the municipal level.

Deputy Sheriff: performs general traffic and law enforcement duties, jailer and telecommunications responsibilities at the county level.

DNR Officer: enforces fish, game, forest and environmental laws at the state level.

State Trooper: performs traffic and law enforcement duties at the state level.

Military Law Enforcement Officer: performs criminal investigations, is responsible for traffic assignments, patrol and general law enforcement duties in any branch of the military service at installations, forts and bases.

Private Investigator: conducts criminal and non-criminal investigations for private business and industry.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Police Administrator
- Chief Deputy
- State Agent
- Federal Agent

Curriculum

Students following the study plan below will complete the Criminal Justice-Law Enforcement Academy technical diploma in the number of semesters shown.

FIRST SEMESTER	CREDITS
30-504-337 Policing in America	1
30-504-338 Legal Context	1
30-504-339 Tactical Skills	3
30-504-340 Relational Skills	3
30-504-341 Patrol Procedures	3
30-504-342 Investigations	2
30-504-343 OMVWI/SFST	1
30-504-345 Police-Fit to Serve	2
30-504-346 Scenario Evaluation	1
SEMESTER TOTAL	17
TOTAL CREDITS	17

Note

- Online application for this program is not available. For program details and application materials, visit: www.nwtc.edu/publicsafety
- Regardless of prior college credit, all courses must be completed to obtain certifiability with the Law Enforcement Standards Board of the Wisconsin Department of Justice.
- This program does not qualify for financial aid as it does not last an entire semester. Veteransí Benefits may be used to cover material and program fees. Contact Enrollment Services for details. A payment plan is also available.
- The credits earned through successful completion of this program do not count toward the 60-credit requirement imposed by Wisconsin Administrative Code Section LES 2.01(1)(e) for employed officers. However, academy credits may be applied toward an Associate Degree in Criminal Justice to partially satisfy the college credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-504-337 POLICING IN AMERICA...students learn rules and procedures of Academy; various elements of Criminal Justice System and the Role of Law Enforcement. Students explore belief systems, social pressures, moral problems, decision making.

30-504-338 LEGAL CONTEXT...students will learn the structure of Criminal Justice System including criminal procedure, arrest, use of force, search, and seizure, the limits on law enforcement activity, classification and elements of crimes.

30-504-339 TACTICAL SKILLS...students will learn the basis for and the limits to use of force by Wisconsin officers. The specific techniques for intervention will range from empty hands to use of firearms.

30-504-340 RELATIONAL SKILLS...students write law enforcement reports, role of communication while developing specific skills/strategies for handling emotionally disturbed people, legal basis for emergency placements, testifying in court, community policing strategies.

30-504-341 PATROL PROCEDURES...students study Wisconsin traffic laws & how to enforce. Investigation of traffic crashes, crash scene management. Emergency vehicle operation, pursuit guidelines, conducting legal basis vehicle contacts. Arrest procedures, OWI, Emergency Medical Services.

30-504-342 INVESTIGATIONS ...students learn techniques, procedures for interviewing and interrogating. Learn to recognize and handle evidence, the correct law enforcement response to a victim of crime, statutory elements and procedures for sensitive crimes.

30-504-343 OMVWI/SFST ...students will learn to recognize and interpret evidence of OMVWI violation, administer and interpret standardized field sobriety tests, make appropriate enforcement decisions, prepare arrest reports and complete associated paperwork.

30-504-345 POLICE-FIT TO SERVE ...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

30-504-346 SCENARIO EVALUATION ...uses scenarios developed by the WI DOJ to evaluate six core abilities critical to success in law enforcement: decision making; tactical skills; emergency management; investigative skills; written and interpersonal communication.

Dental Assistant   Program Code 315081 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Dental Assistant program prepares students for a professional career in Dental Assisting. Upon graduation the student will be proficient in assisting during patient care in a dental office. The program is designed to provide students with the skills and knowledge necessary to become a valuable member of the dental team.

Program Outcomes

• Collect diagnostic and treatment data.
• Manage infection and hazard control.
• Perform clinical supportive treatments.
• Take diagnostic radiographs.
• Perform dental laboratory procedures.
• Provide patient oral health instruction.
• Assist in managing medical emergencies.
• Model professional behaviors, ethics, and appearance.
• Carry out dental office procedures.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

The program prepares graduates to work with dentists as they examine and treat patients. Dental assistants may carry out a variety of laboratory, clinical, and office duties, such as patient scheduling and bookkeeping functions. Dental assistants typically work in general or specialty dental offices. Some dental assistants may work for insurance companies, dental lab studios, or dental supply companies. The dental assistant may also find employment with federal agencies such as the Veterans Administration, US Public Health Services, the Armed Forces, or a state, county, or city health facility.

Graduates may find employment as a:

• Dental Assistant
• Dental Office Manager
• Dental Laboratory Assistant
• Dental Laboratory Technician
• Dental Treatment Coordinator
• Maxillofacial Dental Assistant
• Endodontic Dental Assistant
• Prosthodontic Dental Assistant
• Dental Receptionist
• Dental Practice Manager
• Dental Sales Representative
• Orthodontic Dental Assistant
• Pediatric Dental Assistant
• Periodontic Dental Assistant

Clinical Experience

• Students will be required to purchase personal protection equipment/clothes, pay for liability insurance for dental clinical experience courses and provide their own transportation to the dental office.
• Students are required to complete an American Heart Association Health Care Provider CPR course during their first semester.
• Submit required immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Accreditation

The Dental Assistant program is accredited by the American Dental Association-Commission on Dental Accreditation.

Board/Certification Examinations

Graduates will be provided the opportunity to obtain the CDA credential.

Requirements for Program Application

• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• Admission Assessment, or equivalent or ACT assessment taken within the last five years. (For a list of equivalents, please contact a Counselor.)

Requirements for Program Entry

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 65; Reading Comprehension, 78; Sentence Skills, 75. ACT benchmarks are Math, 15; Reading, 16; English, 16.

Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

• Attend mandatory program orientation.
• Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Suggested Skills for Success

• Students are expected to have entry-level computer and keyboarding skills. It is recommended that students complete basic computer skills coursework if deficient in this area.
• A science background with emphasis in Advanced Biology and Anatomy and Physiology is highly recommended.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-508-101 DENTAL HEALTH SAFETY...prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. (Prerequisite: Accepted into the Dental Hygiene or Dental Assistant Programs)

10-508-103 DENTAL RADIOGRAPHY APPLICATIONS...prepares dental auxiliary students to operate x-ray units and expose bitewing, periapical, extra oral, and occlusal radiographs. Emphasis is placed on protection against x-ray hazards. Students also process, mount, and evaluate radiographs for diagnostic value. In this course students demonstrate competency on a manikin. In addition, students expose bitewing radiographs on a peer, role-play patient. (Prerequisites: 10-508-101, Dent Health Safety AND 10-508-102, Oral Anat & Hist OR 31-508-304, Dental & General Anat)

10-508-113 DENTAL MATERIALS...prepares dental auxiliary students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginate impressions on manikins and clean removable appliances. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy OR 10-508-102, Oral Anatomy, Embry, Histology)

10-508-120 DENTAL OFFICE MANAGEMENT...prepares dental auxiliary students to manage telephones, appointments, recall systems, and inventory. Students also develop the skills need to process accounts receivable and payable, collections, and third party reimbursements. (Prerequisite: 10-508-101, Dental Health Safety)

31-508-302 DENTAL CHAIRSIDE... prepares dental assistant students to chart oral cavity structures, dental pathology, and restorations and to assist a dentist with basic dental procedures including examinations, pain control, amalgam restoration, and cosmetic restoration. Students will also develop the ability to educate patients about preventive dentistry, brushing and flossing techniques, and dental procedures, using lay terminology. Throughout the course, students will apply decoding strategies to the correct use and interpretation of dental terminology. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; Corequisite: 10-508-113, Dental Materials; All other 2nd semester classes)

31-508-304 DENTAL & GENERAL ANATOMY...prepares dental assistant students to apply fundamentals of general and dental anatomy to informed decision-making and to professional communication with colleagues and patients. (Corequisites: 10-508-101, Dental Health Safety; 31-508-307, Dental Asst Professionalism)

31-508-306 DENTAL ASSISTANT CLINICAL...students apply skills developed in Dental and General Anatomy, Dental Health Safety, Dental Chairside, Dental Materials, Dental Radiography, and Professionalism in a clinical setting with patients. Emphasizes integration of core abilities and basic occupational skills. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; 31-508-307, Dental Assistant Professionalism; Corequisites: 31-508-302, Dental Chairside; 10-508-113, Dental Materials; 10-508-103, Dental Radiography Applications)

31-508-307 DENTAL ASSISTANT PROFESSIONALISM...prepares dental assistant students for professional success in a dental practice or another dental health care environment. Students develop professional appearance and image. More importantly, they learn to work within ethical guidelines and legal frameworks. In preparation for entering the work force, dental assistants customize or develop their portfolios and lay out an ongoing professional development plan. (Corequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy)

31-508-308 DENTAL CHAIRSIDE - ADVANCED...prepares dental assistant students to adapt chairside skills to assisting with dental specialties as they are performed in general practice. Focuses on pediatric dentistry, orthodontics, oral maxillofacial surgery, endodontics, periodontic, and prosthodontics. Students will also develop the ability to assist with sealants, perform coronal polishing, and apply topical fluoride and topical anesthetics. (Prerequisites: 31-508-302, Dental Chairside; 31-508-306, Dental Assistant Clinical; All other 2nd semester classes; Corequisite: 31-508-309, Dental Lab Procedures; All other 3rd semester classes)

31-508-309 DENTAL LABORATORY PROCEDURES...prepares Dental Assistant students to produce alginate impressions and fabricate diagnostic models, oral appliances, temporary restorations, and custom trays. Students also polish oral appliances. (Prerequisites: 31-508-304, Dental & Gen Anatomy; 10-508-113, Dental Materials; All other 2nd semester classes; Corequisite: 31-508-308, Dental Chairside-Advanced; All other 3rd semester classes)

31-508-310 DENTAL RADIOGRAPHY - ADVANCED...builds on principles and skills developed in Dental Radiography. Dental assisting students expose full mouth series, extra-oral and specialized radiographs on adult and child patients. Emphasis is placed on protection against x-ray hazards. Students will also process, mount, and evaluate radiographs for diagnostic value. In addition, they will use radiographs to explain dental health and treatment plans to patients. (Prerequisite: 10-508-103, Dental Radiography Applications; All other 2nd semester classes; Corequisite: 31-508-311, Dental Assistant Clinical Advanced; All other 3rd semester classes)

31-508-311 DENTAL ASSISTANT CLINICAL - ADV ...prepares assisting students apply skills developed in Dental Chairside - Advanced, Dental Lab Procedures, Dental Radiography - Advanced, and Dental Office Procedures in a clinical setting with patients. Emphasizes integration of core abilities and basic and advanced occupational skills. (Prerequisite: 31-508-306, Dent Asst Clinical; All other 2nd semester classes; Corequisites: 31-508-308, Dental Chairside Advanced; 31-508-309, Dental Lab Procedures; 31-508-310, Dental Radiography Advanced; 10-508-120, Dental Office Management)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
The Dental Hygienist program prepares
students to perform oral prophylaxis,
apply preventive agents, expose
radiographs, and teach patients oral care.

Program Outcomes
• Model dental hygiene
  professional code of ethics.
• Counsel clients/patients to
  reduce health risks.
• Provide community oral health
  services in a variety of settings.
• Manage infection and hazard control.
• Assess data on all aspects of patient/
  client health using methods consistent
  with dental hygienist scope of
  practice and legal principles.
• Formulate a comprehensive dental
  hygiene care plan in collaboration with
  the client and other health professionals.
• Provide preventive and therapeutic services
  that promote oral health according
  to the needs of the patient/client.
• Evaluate the effectiveness of the
  implemented client/patient
  dental hygiene care plan.

Wisconsin Caregiver Law
NWTC is required to comply with
the Wisconsin Caregiver Law (1997
WISCONSIN ACT 27). The completion of
a caregiver background check includes the
review of criminal records for convictions
of serious crimes or a history of improper
behavior. Students accepted into this
program must complete a background
check through www.CertifiedBackground.
com. Information regarding this process
is provided to students immediately upon
acceptance into the program. Students with
a criminal history may be denied access to
placement at the discretion of the clinical
or practicum site. Consequently, should
a student have a history of convictions of
serious crimes or a history of improper
behaviors, NWTC cannot guarantee
clinical/practicum placement or guarantee
graduation within typical program timing.

Employment Potential
A registered Dental Hygienist may practice
dental hygiene in a health department,
private practice, long term care facility, or
school. Graduates may find employment
on a part-time or full-time basis.

With additional education and/or work
experience, graduates may find other
opportunities for employment.
• Dental Hygiene Instructor
• Public Health Dental Hygienist
• Dental Laboratory Technician

• Dental Sales
• Dental Insurance Review Analyst

Clinical Experience
• Students will be required to purchase
  a uniform, instruments, pay for
  liability insurance, and cover any
  other expenses (including travel)
  related to clinical experiences.
• Students will be required to submit
  immunization documentation. A fee
  is charged for this service. Additional
  information will be provided upon
  acceptance into the program.

Accreditation
The Dental Hygienist program is accredited
by the American Dental Association -
Commission on Dental Accreditation
211 East Chicago Avenue
Chicago, IL 60611-2678
(312) 440-2500

Board/Certification Examinations
Prior to licensure as a Registered Dental
Hygienist, a student is required to pass
the Dental Hygiene National Board
Examination and a Regional Practical Exam.

Requirements for Program Application
• Completed application.
• High school transcript or equivalent.
  (For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.)
• Admission assessment or equivalent
  or ACT assessment taken within the
  last five years. (For a list of equivalents,
  please contact a Counselor.)
• Two semesters High School, or one
  semester in College of: Algebra, Advanced
  Math, Biology, and Chemistry (with a lab
  component). All required course grades
  must be completed with a "C" or better.

Requirements for Program Entry
• As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer or
  ACT) with appropriate benchmark scores
  is necessary. Accuplacer benchmarks are
  Arithmetic, 80; Reading Comprehension,
  90; Sentence Skills, 95; Algebra, 65.
  ACT benchmarks are Math, 18; Reading,
  21; English, 21. Applicants not meeting
  these benchmarks or the equivalent will
  be required to establish an individualized
  academic plan. Upon completion of the
  plan, full program or waitlist status will
  be granted. To learn more about these
  assessments and program benchmark
  scores, please contact an Advisor at
  (920) 498-5444 or (888) 385-6982.
• Attend mandatory spring
  Program Orientation.
• Complete a dental examination within
  three months before entering the program.

Curriculum
Students following the study plan below
will complete the Dental Hygiene associate
degree in the number of semesters shown.

SUMMER SEMESTER	CREDITS
*10-508-101 Dental Health Safety	1
++10-806-177 Gen Anatomy & Physiology	4
++10-806-186 Intro to Biochemistry	4
** 10-890-101 College 101	1
SEMESTER TOTAL	10

FIRST SEMESTER	
* 10-508-102 Oral Anatomy, Embry, Histology	4
*10-508-105 Dental Hygiene Process 1	4
*10-508-107 Dental Hygiene Ethics & Profes	1
10-801-136 English Composition 1	3
++10-806-197 Microbiology	4
SEMESTER TOTAL	16

SECOND SEMESTER	
*10-508-103 Dental Radiography	2
*10-508-106 Dental Hygiene Process 2	4
*10-508-108 Periodontology	3
*10-508-109 Cariology	1
*10-508-111 General & Oral Pathology	3
SEMESTER TOTAL	13

SUMMER SEMESTER	
*10-508-110 Nutrition and Dental Health	2
SEMESTER TOTAL	2

THIRD SEMESTER	
*10-508-112 Dental Hygiene Process 3	5
*10-508-113 Dental Materials	2
*10-508-114 Dental Pharmacology	2
*10-508-115 Community Dental Health	2
10-801-196 Oral/Interpersonal Comm	3
10-809-198 Intro to Psychology	3
SEMESTER TOTAL	17

FOURTH SEMESTER	
*10-508-116 Dental Pain Management	1
*10-508-117 Dental Hygiene Process 4	4
10-809-172 Intro to Diversity Studies	3
10-809-196 Intro to Sociology	3
Elective	2
SEMESTER TOTAL	13
TOTAL CREDITS	71

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable
in any of the courses marked with an asterisk. A
student who withdraws or receives a grade lower
than a "C" in a program course may apply for re-
entry into the program. Consideration for re-entry
will be at the discretion of the re-entry team.

++ No final grade lower than a "B" is acceptable
in the following courses: General Anatomy &
Physiology, Intro to Biochemistry, and Microbiology.
A student who withdraws or receives a grade lower
than a "B" in these courses may apply for re-
entry into the program. Consideration for re-entry
will be at the discretion of the re-entry team.

**The credit for 10-890-101, College 101,
is an institutional requirement for
graduation. Consequently, it is not part
of the program credit requirements.

SUGGESTED ELECTIVES
DH-Dental Career Transition, 10-508-118
DH-Dental Hygiene Board Review, 10-508-119
Dental Hygiene Summer Clinic, 10-508-185

• Complete an American Heart Association
  Health Care Provider CPR course prior
  to program entry. Students are required to
  maintain a current CPR card to comply
  with affiliating agency requirements.
• Complete caregiver background
  check. A fee is charged for this service.
  Additional information will be provided
  upon acceptance into the program.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-508-101 DENTAL HEALTH SAFETY...
prepares dental auxiliary students to respond
proactively to dental emergencies, control
infection, prevent disease, adhere to OSHA
Standards, and safely manage hazardous
materials. Students also take patient vital
signs and collect patient medical/dental
histories. CPR certification is a prerequisite;
students will be required to show proof of
certification before beginning the course.
(Prerequisite: Accepted into the Dental
Hygiene or Dental Assistant Programs)

10-508-102 ORAL ANATOMY,
EMBRYOLOGY AND HISTOLOGY...
prepares Dental Hygienist students to apply
detailed knowledge about oral anatomy to
planning, implementation, assessment, and
evaluation of patient care. Students identify
distinguishing characteristics of normal and
abnormal dental, head, and neck anatomy
and its relationship to tooth development,
eruption and health. (Prerequisites: 10-
806-177, General Anatomy & Physiology,
10-508-101, Dental Health Safety)

10-508-103 DENTAL RADIOGRAPHY
APPLICATIONS...prepares dental auxiliary
students to operate x-ray units and expose
bitewing, periapical, extra oral, and
occlusal radiographs. Emphasis is placed on
protection against x-ray hazards. Students
also process, mount, and evaluate radiographs
for diagnostic value. In this course students
demonstrate competency on a manikin.
In addition, students expose bitewing
radiographs on a peer, role-play patient.
(Prerequisites: 10-508-101, Dent Health
Safety AND 10-508-102, Oral Anat & Hist
OR 31-508-304, Dental & General Anat)

10-508-105 DENTAL HYGIENE PROCESS
1...introduces Dental Hygiene students to
the basic technical/clinical skills required
of practicing Dental Hygienists including
use of basic dental equipment, examination
of patients, and procedures within the
dental unit. Under the direct supervision
of an instructor, students integrate hands-
on skills with entry-level critical thinking
and problem-solving skills. The course also
reinforces the application of Dental Health
Safety skills. (Prerequisites: 10-806-186,
Intro to Biochemistry; 10-508-101, Dental
Health Safety; Corequisite: 10-508-102,
DH-Oral Anatomy, Embry & Histology)

10-508-106 DENTAL HYGIENE
PROCESS 2...this clinical course builds
on and expands the technical/clinical skills
student dental hygienists began developing
in Dental Hygiene Process I. Under the
direct supervision of an instructor, students
apply patient care assessment, planning,
implementation, and evaluation skills to
provide comprehensive care for perio case
type 0, I, and II patients. (Prerequisite: 10-
508-105, DH-Dental Hygiene Process 1)

10-508-107 DENTAL HYGIENE ETHICS
& PROFESSIONALISM...helps student
dental hygienists develop and apply
high professional and ethical standards.
Students apply the laws that govern the
practice of dental hygiene to their work
with patients, other members of a dental
team and the community. Emphasis is
placed on maintaining confidentiality and
obtaining informed consent. Students
enhance their ability to present a professional
appearance. (Prerequisite: Accepted
in the Dental Hygienist Program)

10-508-108 PERIODONTOLOGY...this
course prepares student dental hygienists
to assess the periodontal health of patients,
plan prevention and treatment of periodontal
disease, and to evaluate the effectiveness of
periodontal treatment plans. Emphasis is
placed on the recognition of the signs and
causes of periodontal disease and on selection
of treatments modalities that minimize risk
and restore periodontal health. (Prerequisites:
10-806-197, Microbiology; 10-806-186,
Intro to Biochemistry; 10-508-102, Oral
Anatomy, Embryology & Histology;
Corequisites: 10-508-111, General & Oral
Pathology; 10-508-103, Dental Radiography;
10-508-106, Dental Hygiene Process 2)

10-508-109 CARIOLOGY...this course
focuses on the characteristics and
contributing factors of dental decay. Dental
Hygiene students help patients minimize
caries risk by developing treatment plans,
communicating methods to patients, and
evaluating treatment results. (Prerequisites:
10-806-186, Intro to Biochemistry; 10-
806-197, Microbiology; Corequisite: 10-
508-106, Dental Hygiene Process 2)

10-508-110 NUTRITION AND DENTAL
HEALTH...prepares student dental hygienists
to counsel patients about diet and its impact
on oral health. Students learn to distinguish
between balanced and unbalanced diets
and to construct diets that meet the needs
of patients with compromised dental/oral
health. Students also learn to counsel patients
about the effect of eating disorders on dental
health. (Prerequisites: 10-508-109, Cariology;
10-806-186, Intro to Biochemistry)

10-508-111 GENERAL & ORAL
PATHOLOGY...this course prepares the
student dental hygienist to determine
when to consult, treat or refer clients with
various disease, infection or physiological
conditions. Students learn to recognize
the signs, causes, and implications of
common pathological conditions including
inflammatory responses, immune disorders,
genetic disorders, developmental disorders
of tissues and cysts, oral tissue trauma, and
neoplasm of the oral cavity. (Prerequisites:
10-508-102, Oral Anatomy, Embryology
& Histology; Corequisite: 10-508-103,
Dental Radiography Applications)

10-508-112 DENTAL HYGIENE PROCESS
3...this clinical course builds on and expands
the technical/clinical skills student dental
hygienists developed in Dental Hygiene
Process II. In consultation with the instructor,
students apply independent problem-
solving skills in the course of providing
comprehensive care for perio case type 0, I,
II, and III patients. Dental Hygiene Process
3 introduces root detoxification using hand
and ultra-sonic instruments, manipulation of
files, selection of dental implant prophylaxis
treatment options, and administration of
chemotherapeutic agents. Students also adapt
care plans in order to accommodate patients
with special needs. (Prerequisites: 10-508-
106, Dental Hygiene Process 2; 10-508-108,
Periodontology; 10-508-109, Cariology;
10-508-110, Nutrition & Dental Health)

10-508-113 DENTAL MATERIALS...
prepares dental auxiliary students to handle
and prepare dental materials such as liners,
bases, cements, amalgam, resin restorative
materials, gypsum products, and impression
materials. They also learn to take alginate
impressions on manikins and clean removable
appliances. (Prerequisites: 10-508-101,
Dental Health Safety; 31-508-304, Dental
& General Anatomy OR 10-508-102,
Oral Anatomy, Embry, Histology)

10-508-114 DENTAL
PHARMACOLOGY...prepares student
dental hygienists to select safe and
effective patient premedication, local
anesthetic, chemo therapeutic and anti-
microbial agents within the scope of dental
hygiene practice. Students will also learn
to recognize potential pharmacological
contraindications for specific patients and
to take measures to avoid negative impact
or alert other members of the dental team
to possible negative impact. (Prerequisites:
10-806-186, Intro to Biochemistry; 10-
806-197, Microbiology; Corequisite: 10-
508-112, Dental Hygiene Process 3)

10-508-115 COMMUNITY DENTAL
HEALTH...this course prepares the
Dental Hygienist student to play a
proactive role in improving the dental
health of community members of all ages.
Students perform and interpret dental
health research to determine community
dental health needs, they also participate
in the development, implementation
and evaluation of a community dental
health program. (Corequisite: 10-508-
112, Dental Hygiene Process 3)

10-508-116 DENTAL PAIN
MANAGEMENT...this course prepares the
student dental hygienist to work within the
scope of dental hygiene practice to manage
pain for dental patients. Students learn to
prevent and manage common emergencies
related to administration of local anesthesia,
prepare the armamentarium, and administer
local anesthesia. The course also addresses
the recommendation of alternative pain
control measures. (Prerequisites: 10-508-102,
Oral Anatomy, Embryology & Histology;
10-508-114, Dental Pharmacology; 10-
508-112, Dental Hygiene Process 3)

10-508-117 DENTAL HYGIENE
PROCESS 4...this clinical course builds
on and expands the technical/clinical skills
student dental hygienists developed in
Dental Hygiene Process III. With feedback
from the instructor, students manage all
aspects of cases in the course of providing
comprehensive care for perio case type 0 I, II,
and III patients. Emphasizes maximization of
clinical efficiency and effectiveness. Prepares
student dental hygienists to demonstrate
their clinical skills in a formal examination
situation. (Prerequisites: 10-508-112,
Dental Hygiene Process 3; Corequisite:
10-508-116, Dental Pain Management)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Design and Graphic Technology trains students in Graphic Design, Digital Print Media, and Web. Students complete a portfolio review session with the instructional team during each semester.

Program Outcomes

- Create client based graphic design solutions.
- Create and design graphic communications.
- Assemble and manage a professional portfolio.
- Prepare and manage digital file solutions.
- Operate digital output devices.
- Apply color management solutions.
- Select project appropriate software solutions.
- Select project appropriate output solutions.
- Implement typography strategies.
- Design and produce web graphics.
- Complete practical field experience.
- Develop professional communication abilities.
- Communicate valid solutions to projects.
- Demonstrate personal and project accountability.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may

have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Desktop Publisher: produces professional publications using electronic publishing software, scans graphic images, places text and graphics files onto the page, and operates output devices.

Graphic Designer: develops advertising concepts and prepares art for the final presentations.

Advertising Assistant: works with the ad director or store manager to plan and prepare advertising for print, radio, and TV use.

Commercial Art Worker: prepares artwork and copy to be used in label production, package design, printed materials; prepares process separations; preflights electronic files; manages color control; and manages fonts.

Digital Print Technician: prepares computer files for variable data printing or produce print on demand applications.

Layout Designer: designs basic plans for print advertising, passes on work to a commercial artist or copywriter, and is responsible for final electronic files.

Printing Support Worker/Customer Service Representative: handles electronic and pre-press operations, making color separations, electronic scanning, image editing, and color proofing.

Public Relations Assistant: assists in public relations activities helping to produce brochures, press releases, displays, and newsletters; organizes and prepares materials for use in presentations.

Pre-Press Technician: prepares computer documents for printing; trapping, font usage, picture usage, color management, clipping paths, and placing high and low resolution graphics into document.

Website Designer: builds graphic elements for functional websites.

Curriculum

Students following the study plan below will complete the Design and Graphic Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-120	Macintosh Publishing	3
10-111-161	Macintosh Illustration	3
10-801-136	English Composition 1	3
10-809-103	Think Critically & Creatively	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER		
10-111-110	Macintosh Image Editing-Adv	3
10-111-111	Graphic Design 1	3
10-111-125	Graphic Reproduction Tech	3
10-111-165	Typography	3
10-804-123	Math w Business Apps	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-104-107	Marketing Comm-Integrated	3
10-111-121	Graphic Design 2	3
10-111-130	Presentation Graphics	3
10-111-143	Graphic Reproduction-Adv	3
10-204-110	Publishing Technologies	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		19

FOURTH SEMESTER		
**10-111-199	Des/Graphic Intern Practicum	2
10-204-111	Digital Publishing Operations	3
10-204-124	Variable Data Publishing	3
10-204-126	Digital Print Applications	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		17
TOTAL CREDITS		70

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

**It is recommended that learners take the Design and Graphic Technology Internship Practicum course (10-111-199) in their last semester.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Account Executive
- Art Director
- Design Supervisor
- Media Buyer

The following certificates/technical diplomas may be applied toward this program:
- 906141, Applied Graphics for Prototype and Design

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-104-107 MARKETING COMMUNICATIONS-INTEGRATED ...creating, coordinating and integrating advertising, public relations and marketing activities for a specific customer or audience. A campaign will be developed and presented.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images.

10-111-110 MACINTOSH IMAGE EDITING-ADVANCED ...Photoshop's tool box, layers, paths, channels, scans, color separations, photo retouching. Web pages, Web graphics, Web safe colors, HTML code, Adobe Dimensions, image mapping and interactive capabilities of software. (Prerequisites: 10-111-101, Macintosh-Image Editing)

10-111-111 GRAPHIC DESIGN 1 ...design and drawing for graphic reproduction, design trends, and applications; brochure, advertising, and corporate I.D. package created using basic design process of thumbnails, rough, and comprehensive layout. (Prerequisites: 10-111-120, Macintosh Publishing)

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements.

10-111-121 GRAPHIC DESIGN 2 ...apply basic design techniques to an advertising campaign, illustration techniques, lettering and typography, reproducing logos for print production, use color for advertising, and preparation of a professional portfolio. (Prerequisites: 10-111-111, Graphic Design 1; 10-801-136, English Composition 1)

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-120, Macintosh Publishing)

10-111-130 PRESENTATION GRAPHICS ...focuses on the development of graphics for the effective presentation of illustrations, diagrams and images for computerized presentation. Emphasizing delivery with integrated media techniques. (Prerequisites: 10-111-101, Macintosh-Image Editing; 10-111-161, Macintosh Illustration)

10-111-143 GRAPHIC REPRODUCTION-ADVANCED ...various techniques used to print four-color process images including traditional and electronic separations; trapping, creating PDFs, proofing techniques; color correction; preparing files for flexo, gravure, and screen printing. (Prerequisites: 10-111-125, Graphic Reproduction Techniques)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images.

10-111-165 TYPOGRAPHY ...typography history; type styles and nomenclature; type in design world; type usage in printing; paper nomenclature; paper types; papers used for art, printing, and industry; and future of paper. (Prerequisite: 10-111-161, Macintosh Illustration)

10-111-199 DESIGN AND GRAPHIC INTERN PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-204-110 PUBLISHING TECHNOLOGIES ...introduction to printing process, electronic publishing, prepress operations, press operations, postpress operations, job logs, professional portfolios, and job seeking skills. (Corequisite:10-111-120, Macintosh Publishing)

10-204-111 DIGITAL PUBLISHING OPERATIONS ...press equipment, processors, inks, print quality, job tickets, standard operating procedures, densitometers, printing problems, and trapping situations. (Corequisite: 10-204-110, Publishing Technologies)

10-204-124 VARIABLE DATA PUBLISHING ...learn how to link database files to page layout applications. Create and manage correct variable channels in page layouts, apply text and image changes to layout to create a personalized printed page, research how the information is gathered to create personalized content. (Prerequisites: 10-111-120, Macintosh Publishing)

10-204-126 DIGITAL PRINT APPLICATIONS ...explain why the industry is in a state of transition towards digital printing; outline the proper time to select digital printing as a production tool; what type of project fits well into a digital print environment; identify what type of project fits the mold of digital printing. (Prerequisite: 10-204-110, Publishing Technologies; 10-804-123, Math w Business Apps)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Graduates perform routine sonographic (ultrasound) examinations of the body to include the abdomen, small parts, obstetrics, and gynecology. They work closely with physicians and may assist in the performance of invasive procedures.

Program Outcomes

• Provide patient care and education.
• Adhere to the professional code of ethics for sonographers.
• Communicate with members of the healthcare team.
• Utilize medical technology for sonography.
• Complete diagnostic sonographic exams.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground. com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of the Diagnostic Medical Sonography program can choose to work in a variety of health care settings including clinics, hospitals, private practice physician offices, public health facilities and laboratories performing examinations in their areas of specialization.

Career advancement opportunities exist in education, administration, research, and in commercial companies as education/application specialists, sales representatives, and technical advisors.

Clinical Experience

• Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances for clinical experience.

• Students are required to complete an American Heart Association Health Care Provider CPR course prior to clinical experiences. Students are required to maintain a current CPR card to comply with affiliating agency requirements.

• Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

• Students will be required to show proof of an annual flu vaccine.

Accreditation

The Diagnostic Medical Sonography program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) 1361 Park Street Clearwater, FL 33756 (727) 210-2350

Board/Certification Examinations

Graduates are qualified to take the Obstetric/Gynecology, Abdomen, and Physics Boards through the Association of Registered Diagnostic Medical Sonographers (ARDMS).

Requirements for Program Application

• Completed application and all items listed below.

• As a requirement for program application, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary prior to attending a pre-application informational session. Accuplacer benchmarks are Arithmetic, 80; Reading Comprehension, 90; Sentence Skills, 95; Algebra, 65. ACT benchmarks are Math, 18; Reading, 21; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, applicants may move to the next phase of program application, described below. To learn more about these assessments and program benchmark scores, please contact Admissions at (920) 498-7159 or (888) 385-6982.

• Attendance at a mandatory pre-application informational session will be required. To sign-up for a mandatory pre-application session, please contact Admissions at (920) 498-7159 or (888) 385-6982.

• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)

• Upon completion of the pre-application information session, students will take the Health Educations Systems Inc. (HESI) A2 Exam. The HESI can only be taken after attendance at a pre-application information session. Test topics include Math, Chemistry, Anatomy & Physiology, and Reading. To learn more about these assessment scores, please contact an admissions specialist at (920) 498-7159 or (888) 385-6982, or view the Related Links on the lower right of the the DMS program webpage, http://www.nwtc.edu/academics/ degrees/health-sciences/Medical/Pages/ DiagnosticMedicalSonography.aspx

• Two semesters in high school, or one semester of college Algebra, Biology, and Chemistry (with a lab component) with a grade of "B" or better.

• Enrolled in Physics at time of application (See Requirements for Entry for additional information.)

• Candidates submitting applications to the DMS program must also provide an essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay will follow a question and answer format and will include information related to the following; why they are interested in and their knowledge of the profession, experience in healthcare, specific skills and duties of a sonographer, and characteristics that make them a good candidate for the program.

• The DMS program follows a competitive enrollment process whereby candidate applications are reviewed by a ranking process. Candidates are ranked in the following categories: HESI scores and program essay. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will be canceled and have an opportunity to re-apply with the following year's applicants.

Requirements for Program Entry

• Two semesters in high school, or one semester in college of Physics with a grade of "B" or better.

• Attend mandatory Spring program orientation.

• Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

• Complete mandatory four-hour job shadow.

Suggested Skills for Success

Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Curriculum

Students following the study plan below will complete the Diagnostic Medical Sonography associate degree in the number of semesters shown.

SUMMER SEMESTER

10-804-107	College Mathematics	3
10-806-143	College Physics 1	3
**10-890-101	College 101	1
SEMESTER TOTAL		7

FIRST SEMESTER

*10-501-101	Medical Terminology	3
*10-526-200	Intro to DMS	3
*10-526-210	Cross Sectional Anatomy	2
*10-526-221	Sonography Physics 1	3
++10-806-177	Gen Anatomy & Physiology	4
SEMESTER TOTAL		15

SECOND SEMESTER

*10-526-207	Abdominal Sonography	4
*10-526-208	OB/GYN Sonography 1	3
*10-526-222	Sonography Physics 2	2
*10-526-223	Vascular Imaging 1	3
++10-806-179	Adv Anatomy & Physiology	4
SEMESTER TOTAL		16

SUMMER SEMESTER

*10-526-203	Scanning with Proficiency	1
*10-526-209	DMS Clinical Experience 1	2
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		6

THIRD SEMESTER

*10-526-211	Superficial Sonography	2
*10-526-212	OB/GYN Sonography 2	3
*10-526-213	DMS Clinical Experience 2	1
*10-526-224	Vascular Imaging 2	3
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		15

FOURTH SEMESTER

*10-526-215	DMS Clinical Experience 3	2
*10-526-216	DMS Clinical Experience 4	4
*10-526-218	DMS Clinical Experience 5	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		12
TOTAL CREDITS		71

CURRICULUM NOTE

*No final grade lower than "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

++ No final grade lower than "B" is acceptable in General Anatomy & Physiology and Advanced Anatomy & Physiology. A student who withdraws or receives a grade lower than a "B" is these courses may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101, is an institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-526-200 INTRO TO DMS ...introduces learners to the field of diagnostic medical sonography. Explores the duties and functions of the diagnostic medical sonographer as well as the historical background. Learners examine the other imaging modalities as they relate to sonography. Includes principles of patient care and legal and ethical issues related to sonography. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-203 SCANNING WITH PROFICIENCY...provides learners with the opportunity to enhance their technical skills, accuracy, and proficiency in scanning the abdominal organs and female pelvis of the human body. This is a scanning course dedicated in continuing to prepare the learner for their first clinical experience. (Prerequisites: 10-526-207, Abdominal Sonography; 10-526-208, OB/GYN Sonography 1)

10-526-207 ABDOMINAL SONOGRAPHY ...prepares learners to perform ultrasounds of the abdominal organs including liver, gallbladder, biliary tree, pancreas, spleen, urinary tract, aorta and retroperitoneum. Practice scan sessions included. (Prerequisites: 10-526-200, Intro to DMS; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology. Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-208 OB/GYN SONOGRAPHY 1 ...prepares learners to perform ultrasounds of the nongravid uterus and the first-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female reproductive system as well as intrauterine and ectopic pregnancies. (Prerequisites: 10-526-200, Intro to DMS; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology; Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-209 DMS CLINICAL EXPERIENCE 1 ...opportunities to apply scanning skills in a clinical setting. Students concentrate on ultrasound examinations of the abdominal organs. Participation in this course will take place at a hospital or clinic. (Prerequisites: 10-526-207, DMS-Abdominal Sonography; 10-526-208, DMS-OB/GYN Sonography 1)

10-526-210 CROSS SECTIONAL ANATOMY ...introduces cross sectional anatomy as related to Diagnostic Medical Sonography. Includes correlating images from other imaging modalities. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program.)

10-526-211 SUPERFICIAL SONOGRAPHY ...investigates superficial structure imaging. Includes anatomy, pathophysiology, and sonographic evaluation. Prepared learner to perform ultrasounds of the thyroid, breast, male reproductive system, musculoskeletal system, and GI tract. (Prerequisites: 10-526-207, Abdominal Sonography; 10-526-221, Sonography Physics 1; 10-526-222, Sonography Physics 2; 10-526-210, Cross Sectional Anatomy)

10-526-212 OB/GYN SONOGRAPHY 2 ...prepares learners to perform ultrasounds of the second and third-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female pelvis and the developing fetus. (Prerequisite: 10-526-208, OB/GYN Sonography 1)

10-526-213 DMS CLINICAL EXPERIENCE 2 ...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during scanning procedures. (Prerequisite: 10-526-209, DMS Clinical Experience 1)

10-526-215 DMS CLINICAL EXPERIENCE 3 ...provides further opportunity for students to expand their skills in a clinical setting. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel. (Prerequisite: 10-526-213, DMS Clinical Experience 2)

10-526-216 DMS CLINICAL EXPERIENCE 4...prepares the student to assume the role of a sonographer. This course enhances the student's scanning and employee skills through clinical practice. Serves as a transition between student and employee. (Corequisite: 10-526-215, DMS Clinical Experience 3)

10-526-218 DMS CLINICAL EXPERIENCE 5...prepares the student to assume the role of a sonographer. This course enhances the student's scanning and employee skills through clinical practice. Serves as a transition between student and employee. (Corequisite: 10-526-216, DMS Clinical Experience 4)

10-526-221 SONOGRAPHY PHYSICS 1 ...introduces physics and instrumentation relevant to diagnostic medical sonography. Learners explore how principles of sound propagation in tissues create a sonographic image. (Prerequisite: 10-806-143, College Physics 1)

10-526-222 SONOGRAPHY PHYSICS 2 ...continues the study of physics and instrumentation relevant to diagnostic medical sonography. The laboratory component of this course introduces the student to the concepts of ultrasound instrumentation, an introduction to ultrasonic scanning technique, and maintenance of ultrasound equipment. (Prerequisite: 10-526-221, Sonography Physics 1)

10-526-223 VASCULAR IMAGING 1 ...introduces the principles of vascular sonographic imaging. Learners perform a variety of peripheral vascular arterial and venous duplex exams. (Prerequisites: 10-526-200, Intro to DMS; 10-526-210, Cross Sectional Anatomy; 10-526-221, Sonography Physics 1)

10-526-224 VASCULAR IMAGING 2 ...prepares learners to perform abdominal vascular and physiologic peripheral vascular exams. (Prerequisite: 10-526-223, Vascular Imaging 1)

Diesel & Heavy Equipment Technician
Program Code 324121 | Technical Diploma

Offered at the Sturgeon Bay campus.
For information: (920) 746-4900.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Prepares students to service and repair diesel powered equipment. Instruction covers repair of engine, engine systems driveline, steering, brakes, hydraulic systems, and chassis components.

Program Outcomes
- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine service fundamentals.
- Describe the mechanics of track drive systems.
- Perform required preventative maintenance.
- Use welding and machine tools.
- Maintain brake systems.
- Analyze electronic/electrical systems.
- Manage heating - AC systems.
- Interpret schematic drawings.
- Comprehend power train systems.
- Diagnose engine systems.
- Service vehicle systems.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan.

Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential
Construction Equipment Technician: diagnoses, services, and repairs a variety of construction equipment such as track type tractors, wheel loaders, and back hoe loaders.

Engine Technician: diagnoses and repairs diesel engines.

Farm Equipment Technician: diagnoses, services, and repairs a variety of diesel-powered agricultural equipment.

Fuel Injection Technician: diagnoses, services, and repairs fuel injection systems.

Service Technician: performs preventive maintenance and regularly scheduled maintenance on equipment to keep it in service.

Truck Driver/Diesel Technician: owns or operates a small fleet and wants to perform his/her own regular and preventive maintenance.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Diesel Equipment Mechanic Instructor
- Diesel Shop Owner
- Sales Representative
- Shop Supervisor
- Technical Service Representative
- Truck Fleet Operator

Accreditation
The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians

The NWTC Diesel and Heavy Equipment Technician program is an AED Foundation (Associated Equipment Dealers) Certified Program.

Curriculum
Students following the study plan below will complete the Diesel & Heavy Equipment Technician technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-412-100	Diesel Lab Operations Tech	1
10-412-108	Inte Combust Eng Tech-Intro to	1
10-412-111	Diesel Engine Service Fund	4
10-412-112	Diesel Electrical Systems 1 Te	3
10-412-146	Power Generation 1	2
10-804-107	College Mathematics	3
*10-890-101	College 101	1
32-442-352	Welding-Metal Working Proc	2
SEMESTER TOTAL		18

SECOND SEMESTER		
10-412-120	Diesel-Chassis/Susp/Steer Tech	4
10-412-121	Diesel-Brake Systems Technolog	3
10-412-122	Diesel Preventive Maint Techno	4
10-412-123	Diesel-Elect Systems Technolog	3
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		15

THIRD SEMESTER		
10-412-124	Diesel-Electric Eng System Tec	1
10-412-134	Diesel Engine Systems Technolo	4
10-412-136	Diesel-Mobile Hydraulic Sys Te	2
10-412-137	Diesel-Schematic Interpret Tec	2
10-412-138	Diesel-Track Drive Systems Tec	2
10-412-142	Diesel Equip Service/Maint Tec	3
10-419-169	Hydraulics Technology	2
10-458-100	CDL License Training	1
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-412-140	Diesel Engine Troubleshoot Tec	4
10-412-141	Diesel-Power Trains Technology	5
10-412-145	Diesel-Refrig/AC Technology	3
10-809-197	Contemporary Amer Society	3
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		16
TOTAL CREDITS		66

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

10-412-120 DIESEL-CHASSIS/SUSP/STEER TECHNOLOGY ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-121 DIESEL-BRAKE SYSTEMS TECHNOLOGY ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-122 DIESEL PREVENTIVE MAINT TECHNOLOGY ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpiller systems, and testing methods. (Prerequisite: 10-412-111, Diesel Engine Ser Fund Tech)

10-412-136 DIESEL-MOBILE HYDRAULIC SYSTEM TECHNOLOGY ...mobile hydraulics system components safety, principles of operation, diagnosis, and service.

10-412-137 DIESEL-SCHEMATIC INTERPRET TECHNOLOGY ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-138 DIESEL-TRACK DRIVE SYSTEMS TECHNOLOGY ...track shop safety, track drive component parts, system operation, inspection, system diagnoses, system repair, system service, and system maintenance. (Corequisite: 10-412-100, Diesel-Lab Operations)

10-412-140 DIESEL ENGINE TROUBLESHOOT TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-111, Diesel Engine Ser Fund Tech)

10-412-141 DIESEL-POWER TRAINS TECHNOLOGY ...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

10-412-142 DIESEL EQUIP SERVICE/MAINT TECHNOLOGY ...shop safety; service manuals; preventive maintenance forms; federal inspection policy; preventive maintenance for trucks, trailers, engine brakes/retarders, construction, and agricultural equipment; and electronic trouble shooting trees. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-146 POWER GENERATION 1 ...this course is designed to familiarize diesel technician students with the basics of home standby and commercial generators. Electrical fundamentals, alternators, permanent magnet generators, circuit breakers, generator switchgear, auto transfer switches and automatic voltage regulators will be covered emphasizing home standby and commercial use generators.

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not be limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

10-458-100 CDL LICENSE TRAINING ...this course is designed to prepare students for the Wisconsin Class A Commercial Drivers License (CDL) pre-trip inspection, air brake and skills test. Preparation will also be given for taking the State DOT written test including general knowledge, air brakes and combination vehicles.

Offered at the Sturgeon Bay campus.
For information: (920) 746-4900.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Prepares students to service and repair diesel powered equipment and prepare graduates for management, ownership, supervisory level positions and advanced educational options. Instruction incorporates repair of steering, brakes, hydraulic systems, and chassis components.

Program Outcomes

- Apply hydraulic systems fundamentals
- Manage chassis, steering, and suspension systems
- Explain diesel engine systems
- Explain diesel engine service fundamentals
- Perform required preventive maintenance
- Maintain brake systems
- Analyze electronic/electrical systems
- Manage heating - A/C systems
- Comprehend power train systems
- Interpret schematic drawings
- Diagnose engine systems
- Service vehicle systems
- Communicate effectively with the customer
- Complete customer repair orders accurately
- Organize a daily work schedule
- Tabulate a daily time sheet of technician's repair work

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in math, science and technology education would be beneficial.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Diesel and Heavy Equipment Technician: diagnoses, services, and repairs a variety of heavy equipment ranging from over-the-road trucks, off-road construction equipment, agricultural equipment, and potentially stationary power supply engines.

Related Specialist Technician: diagnoses, services, and repairs fuel injection systems, hydraulics systems, trailer service and other specialty areas.

Related Parts Support Manager: manages a parts department within a repair facility.

Industry Related Service Manager-Supervisor: manages technician performance, directs work flow, tracks work progress, coordinates service business profitability, reports to Operations level management.

Industry Related Sales Representative: sales position within the diesel and heavy equipment industry or support business to the industry.

Business Owner: owns own business related to the diesel and heavy equipment or support business.

Educational Trainer: With additional study and transfer to a four-year baccalaureate college, a graduate could pursue a four-year degree in secondary, post-secondary or technical training industry.

Accreditation

The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians.

The NWTC Diesel Equipment Technology program is an AED Foundation (Associated Equipment Dealers) Certified Program.

Curriculum

Students following the study plan below will complete the Diesel Equipment Technology associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-412-100	Diesel Lab Operations Tech	1
10-412-108	Inte Combust Eng Tech-Intro to	1
10-412-111	Diesel Engine Service Fund	4
10-412-112	Diesel Electrical Systems 1 Te	3
*10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
**10-890-101	College 101	1
SEMESTER TOTAL		**16**

SECOND SEMESTER

10-412-120	Diesel-Chassis/Susp/Steer Tech	4
10-412-121	Diesel-Brake Systems Technolog	3
10-412-122	Diesel Preventive Maint Techno	4
10-412-123	Diesel-Elect Systems Technolog	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		**17**

THIRD SEMESTER

10-412-124	Diesel-Electric Eng System Tec	1
10-412-134	Diesel Engine Systems Technolo	4
10-412-136	Diesel-Mobile Hydraulic Sys Te	2
10-412-137	Diesel-Schematic Interpret Tec	2
10-419-169	Hydraulics Technology	2
10-458-100	CDL License Training	1
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**18**

FOURTH SEMESTER

10-412-140	Diesel Engine Troubleshoot Tec	4
10-412-141	Diesel-Power Trains Technology	5
10-412-145	Diesel-Refrig/AC Technology	3
10-801-197	Technical Reporting	3
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		**18**
TOTAL CREDITS		**69**

CURRICULUM NOTE

*Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Note
- A three to five page paper or specialty assignments are required for courses applied to an associate degree. Individual instructor requirements will be received at program orientation and listed in each course syllabus.
- Diesel program students are able to enroll in a four-credit Power Generation program enhancement certificate. Please call (920) 746-4919 for more details.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-111 DIESEL ENGINE SERVICE FUNDAMENTALS ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

10-412-120 DIESEL-CHASSIS/SUSP/STEER TECHNOLOGY ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-121 DIESEL-BRAKE SYSTEMS TECHNOLOGY ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-122 DIESEL PREVENTIVE MAINT TECHNOLOGY ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpiller systems, and testing methods. (Prerequisite: 10-412-111, Diesel Engine Ser Fund Tech)

10-412-136 DIESEL-MOBILE HYDRAULIC SYSTEM TECHNOLOGY ...mobile hydraulics system components safety, principles of operation, diagnosis, and service.

10-412-137 DIESEL-SCHEMATIC INTERPRET TECHNOLOGY ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-140 DIESEL ENGINE TROUBLESHOOT TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-111, Diesel Engine Ser Fund Tech)

10-412-141 DIESEL-POWER TRAINS TECHNOLOGY ...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not be limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

10-458-100 CDL LICENSE TRAINING ...this course is designed to prepare students for the Wisconsin Class A Commercial Drivers License (CDL) pre-trip inspection, air brake and skills test. Preparation will also be given for taking the State DOT written test including general knowledge, air brakes and combination vehicles.

Digital Media Technology

Program Code 102065 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Digital Media Technology Program prepares students to compete in a global digital workforce including content conception, creation, and implementation. Learners will develop multimedia production skills using digital audio and video recording and editing, motion graphics, internet broadcasting (i.e., podcasting), and data transfer and conversion from analog to digital media. The program will provide learning opportunities for those desiring a business-related position or project-based entrepreneurial contract work.

Program Outcomes

- Create design for digital media.
- Perform internet broadcasting.
- Assemble a digital media portfolio.
- Produce animation for video.
- Create interactive digital interfaces.
- Operate digital media studio.
- Interface digital media into websites.
- Set the motion effects to 2D graphic designs.
- Write scripts.
- Conduct multi-track recording sessions.
- Compose audio scoring for video.
- Conduct live audio recording for video.
- Compose/edit/image both still and motion photography.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Computer familiarity and ability to use a keyboard and mouse.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of the College Catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan.

Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

Program graduates may work in this evolving Digital Media Technology field, and will be needed by the media industry, as designers, developers, and technicians. For example, they will be hired or contracted as media creators and designers for video, interactive media, websites, and some will be New Media entrepreneurs expanding applications for the media arts in the 21st century.

A graduate of this program will have the potential for employment in the following areas:

Digital Media Operator: develops multi-functional digital content for commercial, educational, and entertainment establishments. Researches and analyzes digital media utilization and functionality. Reviews digital media trends and effectiveness in marketing, advertising, training, creative services, and communications fields.

Motion Graphic Artist: performs detailed graphic compositing for broadcast, web, DVDs and mobile devices. Coordinates production of static and motion visuals and presentations for business, training, recreational and other applications.

Video Editor: assists post-production department by performing asset management and non-linear video editing duties. Performs script-based synchronization of audio, video, special effects, titles and graphics.

Multimedia Production Assistant: assists in production, from concept through postproduction, of digital media client-based projects. Operational workflow duties include assisting with concept planning, storyboarding, scriptwriting, production, editing, and delivery.

Freelance Digital Media Producer: initiates entrepreneurial work with self-established client base. Acts as a full-service digital media content creator and consultant. Provides customer with promotional, training, communication and other content for internal and external delivery methods and mediums.

Curriculum

Students following the study plan below will complete the Digital Media Technology associate degree in the number of semesters shown. Learners are encouraged to meet with an NWTC Academic Advisor to create a program plan.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-206-100	Digital Audio Overview	3
10-206-107	Internet Broadcasting	3
10-206-178	Film/Broadcast Scriptwriting	3
10-801-136	English Composition 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		**16**

SECOND SEMESTER		
10-206-120	Music Production-Logic Studio	3
10-206-154	Macintosh Video Editing	3
10-206-180	Film/Broadcast Preproduction	3
10-206-183	Video Photography	3
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-206-101	Soundtracks and Music	3
10-206-108	Internet Broadcasting-Advanced	3
10-206-174	Motion Graphics for Video	3
10-809-103	Think Critically & Creatively	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**16**

FOURTH SEMESTER		
10-206-175	Motion Graphics Advanced	3
10-206-185	Macintosh Video Editing-Adv	3
10-206-199	Dig Media Internship Practicum	2
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**67**

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

SUGGESTED ELECTIVES

10-152-185, Website Coding
10-206-102, Audio Engineering One
10-104-119, Social Media Marketing

With additional education and/or work experience, graduates may find other opportunities for employment.

- Digital Media Operations Manager
- Internet Broadcaster
- Sound Recordist/Editor
- Video Production Coordinator
- Videographer
- Video Department Manager

The following certificates/technical diplomas may be applied toward this program:

- 902061, Internet Broadcasting
- 902062, Recording & Audio Engineering

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self- exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images.

10-206-100 DIGITAL AUDIO OVERVIEW ...concept of analog to digital audio conversion; audio production with software including editing, processing, mixing and exporting. Creating radio imaging and advertising; producing various length content for distribution through multiple medium.

10-206-101 SOUNDTRACKS AND MUSIC ...utilize software applications to prepare audio for video including environment sounds, sound effects and Foley, dialogue replacement, and soundtrack creation. (Prerequisite: 10-206-100, Digital Audio Overview)

10-206-107 INTERNET BROADCASTING ...plan, prepare and organize digital media content for online distribution and access. Pre- through post-production techniques including technical and commercial aspects of digital media content for internet delivery.

10-206-108 INTERNET BROADCASTING-ADVANCED ...advanced pre- through post-production techniques including technical/commercial aspects of digital media content for internet delivery. Business fundamentals, target marketing, copy writing, commercial distribution, user-generated content (UGC) service/s. (Prerequisites: 10-206-107, Internet Broadcasting; 10-801-136, English Composition 1)

10-206-120 AUDIO PRODUCTION WITH LOGIC PRO ...covers the basic concepts of music production using Logic Pro; develops skills in portable audio, audio for video and advanced audio production of radio programming. (Prerequisite: 10-206-100, Digital Audio Overview)

10-206-154 MACINTOSH VIDEO EDITING ...media types including audio, video and graphics to create original commercial, educational and entertainment productions for delivery to broadcast, CD/DVD and web. Final Cut Pro, LiveType and Photoshop software. (Prerequisite: 10-111-101, Macintosh-Image Editing)

10-206-174 MOTION GRAPHICS FOR VIDEO ...creating high impact, dynamic effects for video productions utilizing digital media including still and motion video, graphics, text and applied filters. Apple Motion, Adobe After Effects and Photoshop software. (Prerequisites: 10-206-154, Macintosh Video Editing; 10-111-101, Macintosh-Image Editing)

10-206-175 MOTION GRAPHICS ADVANCED ...advanced motion graphic content creation including motion tracking, color correction, rotoscoping and advanced compositing. Adobe After Effects, Mocha AE and Media Encoder. (Prerequisites:10-206-174, Motion Graphics for Video; 10-801-136, English Composition 1)

10-206-178 FILM AND BROADCAST SCRIPTWRITING ...research and development of writing and formatting stories adapted for film and broadcast. Covers applying three-part story structure, developing plot and theme, and identifying target audience.

10-206-180 FILM AND BROADCAST PREPRODUCTION ...beginning stages of production (planning, coordinating, budgeting). Revising scripts/planning, location scouting, hiring cast/crews, legal matters (copyright, model/location releases). Preparation of digital video production for multiple output devices.

10-206-183 VIDEO PHOTOGRAPHY ...technical aspects of capturing motion images including composition, lighting, exposure, filtration, and camera selection. Develop skills in pre-production through post-production of motion photography projects. (Prerequisite: 10-206-107 Internet Broadcasting)

10-206-185 MACINTOSH VIDEO EDITING-ADVANCED ...(Final Cut Studio) video production, planning/scripting, digital transfers, advanced editing techniques, color correction/output. Media, camera (SD, HD), file formats, encoding, compression/ delivery methods. Production of portfolio quality, commercially viable video. (Prerequisites: 10-206-154, Macintosh Video Editing; 10-801-136, English Composition 1)

10-206-199 DIGITAL MEDIA INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Early Childhood Education program prepares students to work as teacher-caregivers in early childhood settings. It combines hands-on fieldwork in area centers with related academic work at the college. Graduates become responsible for the care and education of children in the birth-to-eight-years age range. They create and maintain safe and healthy play environments, guide behavior, plan and implement learning activities, and work cooperatively with staff and parents.

Program Outcomes

- Apply child development theory to practice.
- Cultivate relationships with children, family, and the community.
- Assess child growth and development.
- Use best practices in teaching and learning.
- Demonstrate professionalism.
- Integrate health, safety, and nutrition practices.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Demonstrated suitability to the early childhood profession as indicated by completion of a functional ability checklist.
- Complete physical examination within three months prior to Practicum course. Maintain proper immunizations.
- Completed an American Heart Association CPR course prior to program entry to include the AED component for infants and toddlers as well as adults. Students are required to maintain a current CPR card on a two-year renewal cycle.
- Mastered basic math before entering this program. Basic math covers whole numbers, fractions, decimals, percents and measurements.
- Demonstrated proficiency in basic skills through a course placement assessment.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 34; Reading Comprehension, 55; Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Complete Caregiver Background Check annually. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Early Childhood Teacher in Preschool or Group Childcare Centers/Head Start Teacher: plans and implements daily activities with concern for health, safety, and welfare for a designated group of children; supervises the assistant childcare teacher; administers instructional program to young children that promotes their physical, social, psychological, and intellectual development; and provides a flexible balance of active and quiet activities, individual and group activities, indoor and outdoor activities, free choice, guided activities and conduct developmental assessments.

Family Childcare Provider/Teacher/Owner: same functions as above only in a home setting.

Early Childhood Program Director, Day Camp Director, Child Care Center Administrator, Child Care Center Manager: The above positions may require responsibilities of one or more of the following items: responsible to the Board of Directors for day-to-day operations of entire school, including programming, facility, fiscal responsibilities, working knowledge of professional organizations for higher standards, providing customer service, and all human resource functions such as: hiring/firing, supervision, training, and evaluation of staff according to state requirements.

Note
- A student who does not meet the requirements for program entry is required to consult an NWTC counselor about ways to make up any deficiencies through testing or course work.
- It is necessary to show good health as evidenced by a medical examination within three months prior to beginning practicum class.
- Students will be required to wear a NWTC issued name tag, provide their own transportation to assigned sites and cover any other expenses related to practicum experiences. Students may be expected to travel distances.
- Availability: Student Teaching hours will span between 6 a.m. ñ 6 p.m. with the majority of the 90 hours occurring in the morning.
- Completion of a Wisconsin Technical Skills Attainment (TSA) portfolio is required to graduate from this program.
- NWTC offers credit-based courses, credentials and degree options that align with the YoungStar requirements.

The following certificates/technical diplomas may be applied toward this program:
- 903070, Early Childhood: Licensing Basic Ages 0-2 Certificate
- 9030710, Early Childhood: Licensing Basic Ages 3-5 Certificate
- 9030711, Early Childhood: Preschool Certificate
- 903073, Early Childhood: Infant Toddler Certificate
- 9030714, Early Childhood Professional Development 1 Certificate (The combined 12 credits from the 9030715, Early Childhood Professional Development 2 Certificate and this certificate count toward 15 credits in the Early Childhood Education Program.)
- 9030715, Early Childhood Professional Development 2 Certificate (The combined 12 credits from the 9030714, Early Childhood Professional Development 1 Certificate and this certificate count toward 15 credits in the Early Childhood Education Program.)

Note
Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (2009 WISCONSIN ACT 76). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background

Curriculum

Students following the study plan below will complete the Early Childhood Education associate degree in the number of semesters shown. Courses are offered online, accelerated, and blended, and may be taken in any order as long as prerequisites are met. For additional course and certificate offerings, refer to the information in the Early Childhood Team Site in the Related Links area at the right of this page.

FIRST SEMESTER		CREDITS
10-307-148	ECE: Foundations of ECE	3
10-307-167	ECE: Hlth Safety & Nutrition	3
*10-307-174	ECE: Practicum 1	3
**10-307-178	ECE: Art Music & Lang Arts	3
10-307-179	ECE: Child Development	3
10-801-136	English Composition 1	3
***10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-307-151	ECE: Infant & Toddler Dev	3
10-307-188	ECE: Guiding Child Behavior	3
*10-307-192	ECE: Practicum 2	3
**10-307-194	ECE: Math Science & Soc Studies	3
10-809-188	Developmental Psychology	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-307-166	ECE: Curriculum Planning	3
10-307-187	ECE: Children w Diff Abilities	3
10-307-195	ECE: Family & Community Relationships	3
*10-307-197	ECE: Practicum 3	3
****10-806-112	Principles of Sustainability	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
*10-307-199	ECE: Practicum 4	3
10-307-204	Supervision/Administration of ECE Programs	3
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		15
TOTAL CREDITS		70

CURRICULUM NOTE

* Practicum courses require student teaching in the community, in addition to course work. NWTC Faculty arranges practicum settings for/ with students. Students are required to complete a minimum of 90 hours in each practicum placement. It is recommended that students take one practicum per semester. Students are required to achieve a grade of "C" or higher in the practicum courses to continue in or graduate from this program. Read more about Practicums online.

** Blended online class requires two/three Saturday visits to the Green Bay Campus

*** The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

**** If a student is considering pursuing a 4-year degree, Intermediate Algebra w/ Apps,10-804-118, should be taken in place of Principles of Sustainability, 10-806-112.

SUGGESTED ELECTIVES

- 10-307-108, ECE: Food/Nutrition Issues
- 10-307-109, ECE: School Age
- 10-307-110, ECE: Teacher/Fam Communication
- 10-307-113, Infant/Toddler Group Care
- 10-307-171, ECE: Behavior/Emotional Challenges
- 10-307-172, ECE: Special Health Care Needs

check through www.CertifiedBackground.com. A fee is charged for this service. Information regarding this process is provided to students immediately upon acceptance into the program. Students accepted into this program must complete a Background Information Disclosure form disclosing any acts, crimes, or convictions prior to program entry and annually for the remainder of the program. The information provided in the Background Information Disclosure form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement as a result of the criminal history. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee practicum placement or guarantee graduation within typical program timing.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-307-148 ECE: FOUNDATIONS OF EARLY CHILDHOOD ... integrate strategies that support diversity and anti-bias perspectives; summarize early childhood education settings; identify components of a quality program; summarize responsibilities of early childhood professionals; explore early childhood curriculum models.

10-307-151 ECE: INFANT/TODDLER DEVELOPMENT...infant and toddler development in an early childhood education setting. Development of infants/toddlers; prenatal conditions and development; child development theories; heredity and the environment; culturally and developmentally appropriate environments.

10-307-166 ECE: CURRICULUM PLANNING ...curriculum planning in early childhood. Strategies that support diversity and anti-bias perspectives; critical role of play; developmentally appropriate environment; caregiving routines; promoting child development and learning; early childhood curriculum models. (Prerequisite: 10-307-194, ECE: Math, Science, Social Studies OR 10-307-178, ECE: Art, Music, Language Arts)

10-307-167 ECE: HEALTH/SAFETY/NUTRITION...health, safety, and nutrition in early childhood settings. Anti-bias perspectives; governmental regulations and professional standards; safe, healthy, and nutritionally sound early childhood programs; child abuse/neglect mandates; SIDS risk reduction; Shaken Baby Syndrome.

10-307-174 ECE: PRACTICUM 1 ...learn/practice skills in a child care setting. Includes documenting behavior, exploring diversity, implement activities developed by the cooperating teacher, practicing caregiving routines, and positive professional and interpersonal skills. (Prerequisite: Accepted in Early Childhood Education program)

10-307-178 ECE: ART/MUSIC/LANGUAGE ARTS ...beginning curriculum development in art, music, and language arts. Role of play; developmentally appropriate environment; promote child development; caregiving routines as curriculum; language, literature, and literacy activities, art/music, movement activities.

10-307-179 ECE: CHILD DEVELOPMENT...child development in the early childhood education setting. Social, cultural, and economic influences on child development; child development theories; development of children age three to eight; child development research; heredity and environment.

10-307-187 ECE: CHILDREN WITH DIFFERING ABILITIES ...differing abilities in early childhood settings. Anti-bias perspectives, inclusion, ADA/IDEA, typical and exceptional development; physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders; community and professional resources; IEP/IFSP; adapt curriculum, cultivate partnerships.

10-307-188 ECE: GUIDING CHILDRENS BEHAVIOR ...strategies to guide children's behavior in the early childhood setting. Anti-bias perspectives, guidance principles, factors affecting behavior, guidance strategies, individual needs, guidance philosophy.

10-307-192 ECE: PRACTICUM 2 ...learn/practice skills in a child care setting. Growth/Development, support diversity, implement student developed activity plans, guidance strategies, professional behaviors, caregiving routines as curriculum, positive interpersonal skills with adults. Prerequisites: Accepted in Early Childhood Education program; 10-307-174, ECE: Practicum 1)

10-307-194 ECE: MATH/SCIENCE/SOCIAL STUDIES ...beginning curriculum development in math, science, social studies. Support diversity, role of play, developmentally appropriate environment, activity plans that promote learning, create appropriate math, science and social studies activities.

10-307-195 ECE: FAMILY/COMMUNITY RELATIONSHIPS ...relationships with family/community in early childhood. Diversity and anti-bias perspectives in families and community; family patterns, trends, relationships; communication strategies; relationships with families; advocate for children/families; community resources.

10-307-197 ECE: PRACTICUM 3 ...learn/practice skills in a child care setting. Assess growth/development; early childhood standards; curriculum; developmentally appropriate environment; guidance strategies; professional behaviors/practices; lead caregiving routines; interpersonal skills with children/adults. (Prerequisites: Accepted in Early Childhood Education program; 10-307-192, ECE: Practicum 2)

10-307-199 ECE: PRACTICUM 4 ...learn/practice skills in a child care setting. Growth/development, assessment, anti-bias perspectives, professional behavior/practices; curriculum, relationships, evaluating programs for quality, professional options in early childhood. (Prerequisites: Accepted in Early Childhood Education program; 10-307-197, ECE: Practicum 3)

10-307-204 SUPERVISION/ADMINISTRATION OF ECE PROGRAMS ...roles and responsibilities of directors, coordinators, supervisors and other administrators in early childhood programs.

Electrical Engineering Technology
Program Code 106621 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Electrical Engineering Technology (EET) prepares students to test, maintain, and troubleshoot electrical and electronic devices as found in machinery, computers, and communications. The program consists of two tracks: a transfer track, which includes calculus, for those students planning to transfer to a four-year EET program, and a general track, for those students not planning to transfer. The EET transfer track graduate will be able to transfer to a four-year bachelor's degree program in Electrical Engineering Technology or Electrical Engineering.

Program Outcomes

- Practice workplace safety standards.
- Communicate using common technical terminology and graphic symbology both orally and in writing.
- Write technical documents.
- Develop an industry acceptable team centered work ethic.
- Use Office Suite software package tools.
- Apply mathematics to the field of electricity and electronics.
- Measure electrical parameters in DC and wideband AC circuits.
- Apply circuit theorems to AC/DC RLC circuits.
- Apply Boolean theorems to basic digital circuits.
- Develop and describe transfer characteristics of frequency sensitive linear circuits.
- Predict operation of circuits containing active components.
- Describe the various digital modulation techniques.
- Identify characteristics of power electrical devices and circuits.
- Implement project using embedded computer systems.
- Describe wireless communication techniques.
- Analyze automatic electrical machine control circuits.
- Use tools for electrical/electronic test and assembly tasks.
- Apply transistor models to analyze frequency dependent circuits.
- Apply programmable logic controller functions to accomplish basic digital operations.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 80; Sentence Skills: 75; College Level Math: 63. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Electrical/Electronic Development Technician: assists engineers in the design and development of experimental and prototype equipment and products.

Electrical/Electronic Maintenance Technician: services and programs in-plant automatic control equipment, computers, robots, and other equipment.

Electrical Test Technician: tests, troubleshoots, and inspects electrical/electronic products (quality control testing).

Electrical/Electronics Technician: maintains equipment including motor controllers, cables, communication equipment, computers, security systems, CNC equipment, programmable controllers, robots, and automatic production equipment; works with engineers in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Computer Field Service Supervisor
- Electrical/Electronics Production Superintendent
- Electrical/Electronics Maintenance Supervisor
- Field Service Engineer
- Electrical Engineer

Curriculum

Students following the study plan below will complete the Electrical Engineering Technology associate degree in the number of semesters shown.

ALL STUDENTS COMPLETE FIRST SEMESTER

10-620-140 Machine Wiring and Safety	1
10-660-101 Digital 1: Logic	1
10-660-102 Digital 2: Sequential	1
10-660-103 Digital 3: Registers	1
10-660-104 DC 1: Introduction	1
10-660-105 DC 2: Circuits	1
10-660-106 DC 3: Circuit Theorems	1
*10-801-136 English Composition 1	3
10-804-196 Trigonometry w Apps	3
10-809-199 Psychology Of Human Relations	3
*10-890-101 College 101	1
TOTAL CREDITS	17

ALL STUDENTS COMPLETE SECOND SEMESTER

10-660-107 AC 1: Properties	1
10-660-108 AC 2: Reactance	1
10-660-109 AC 3: RLC Circuits	1
10-660-110 Electronics 1: Diodes-Basic	1
10-660-111 Electronics 2: Trans-Basic	1
10-660-112 Electronics 3: Op-Amps-Basic	1
10-660-113 Digital 4: ALU	1
10-660-114 Digital 5: Characteristics	1
10-801-197 Technical Reporting	3
10-804-195 College Algebra w Apps	3
TOTAL CREDITS	14

GENERAL TRACK SECOND SEMESTER

Elective	3
TOTAL CREDITS	3

TRANSFER TRACK SECOND SEMESTER

10-806-143 College Physics 1	3
TOTAL CREDITS	3

ALL STUDENTS COMPLETE THIRD SEMESTER

10-605-160 Linear Electronics 1: BJT Amps	1
10-605-161 Linear Electronics 2: JFET Amp	1
10-605-162 Linear Electronics 3: Filters	1
10-605-163 Micro 1: Introduction	1
10-605-164 Micro 2: Technique	1
10-605-165 Micro 3: Interfaces	1
10-605-170 Datacomm 1: Introduction	1
10-605-171 Datacomm 2: Pulse Code Mod	1
10-605-172 Datacomm 3: Delta Modulation	1
10-662-112 DC/AC 3	3
10-809-172 Race Ethnic & Diversity	3
TOTAL CREDITS	15

GENERAL TRACK THIRD SEMESTER

10-806-143 College Physics 1	3
Elective	1
TOTAL CREDITS	4

TRANSFER TRACK THIRD SEMESTER

10-804-198 Calculus 1	4
TOTAL CREDITS	4

ALL STUDENTS COMPLETE FOURTH SEMESTER

10-605-169 Electronics Design Integration	3
10-605-180 Analog Comm 1: Noise Effects	1
10-605-181 Analog Comm 2: AM/SSB	1
10-605-182 Analog Comm 3: FM Systems	1
10-620-161 Power Electricity 1: Motors	1
10-620-162 Power Electricity 2: Motors	1
10-662-124 Electronic Circuit Analysis	3
10-809-195 Economics	3
TOTAL CREDITS	14

GENERAL TRACK FOURTH SEMESTER

10-605-158 Power Electronics 2: Drives	1
10-620-170 Robotics - Introduction to	1
Elective	2
TOTAL CREDITS	4

TRANSFER TRACK FOURTH SEMESTER

10-804-181 Calculus 2	4
TOTAL CREDITS	4

CURRICULUM NOTE
* Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES
Machine Tool Processes 1, 10-420-171
Machine Tool Processes 2, 10-420-172
Machine Fabrication 1, 10-442-150
Machine Fabrication 2, 10-442-151
Mechanics 1: Basic, 10-620-121
Mechanics 2: Intermediate, 10-620-122
Mechanics 3: Systems, 10-620-123
Fluids 1: Basic Pneumatics, 10-620-100
Fluids 2: Basic Hydraulics, 10-620-101
Fluids 3: Intermediate Hy, 10-620-165
Rigging Systems 1, 10-620-105

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-605-160 LINEAR ELECTRONICS 1: BJT AMPLIFIERS ...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers. (Prerequisites: 10-660-109, AC 3: RLC Circuits; 10-660-112, Electronics 3: Op-Amps-Basic)

10-605-161 LINEAR ELECTRONICS 2: JFET AMPLIFIERS ...characteristics of the junction field-effect (JFET) transistor amplifier and types of commonly used field effect transistor amplifiers. (Corequisite: 10-605-160, Linear Electronics 1: BJT Amplifiers)

10-605-162 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS ...review the characteristics of the passive RL, RC, RLC active filters, introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-163 MICROPROCESSORS 1: INTRODUCTION ...use of simulation software, fundamentals of C language programming, basic logic and control, analog and digital inputs, flowcharting, motor control, objects, and PWM techniques.

10-605-164 MICROPROCESSORS 2: TECHNIQUE ...bitwise operations, pseudo-ops, more C programming techniques, LCD display, control logic, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-165 MICROPROCESSORS 3: INTERFACES ...more C language programming for arrays, logic and control, scaling, input and output, software standards, and continued use of simulation software. (Prerequisite: 10-605-164, Micro 2: Technique)

10-605-169 ELECTRONICS DESIGN INTEGRATION ...design, coordinate, and apply electrical, electronics, and/or microprocessor skills into an integrated final project. (Prerequisites: 10-605-165, Micro 3: Interfaces; 10-605-162, Linear Electronics 2:Filters; 10-605-172, Datacomm 3: Delta Modulation)

10-605-170 DATACOMM 1: INTRODUCTION ...introduction to pulse amplitude modulation, pulse amplitude modulation principles, sampling, signal reconstruction, and and pulse code modulation. (Prerequisite: 10-660-103, Digital 3: Registers)

10-605-171 DATACOMM 2: PULSE CODE MODULATION ...introduction to time division multiplexing pertaining to pulse amplitude modulation and pulse code modulation, sampling and signal reconstruction, analog to digital conversation, digital to analog conversion, amplitude shift keying, and error detection techniques. (Prerequisite: 10-605-170, Data Comm 1: Introduction)

10-605-172 DATACOMM 3: DELTA MODULATION ...introduction to delta modulation, delta modulation principles, sampling and signal reconstruction, frequency shift keying, phase shift keying, and pseudo code generation. (Prerequisite: 10-605-171, Data Comm 2: Pulse Code)

10-605-180 ANALOG COMMUNICATIONS 1: NOISE EFFECTS ...characteristics of noise in communications systems and analyze amplitude modulation. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-605-181 ANALOG COMMUNICATIONS 2: AM/SSB ...characteristics of single sideband transmission and receiving systems. (Prerequisite: 10-605-180, Analog Comm 1: Noise Effects)

10-605-182 ANALOG COMMUNICATIONS 3: FM SYSTEMS ...characteristics of frequency modulation transmission and receiving systems. (Prerequisite: 10-605-181, Analog Comm 2: AM/SSB)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...single and 3-phase AC Induction motors, specialty motor performance and characteristics, and three-phase power systems. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of industrial robots.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1: Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presetable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Corequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Corequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-660-112 ELECTRONICS 3: OP-AMPS-BASIC ...introduction to the circuit characteristics of integrated operational amplifiers. The various connections, inverting, non-inverting and comparator will be studied as well as specialized applications such as summers and filters. (Corequisite: 10-660-111, Electronics 2: Transistor-Basic)

10-660-113 DIGITAL 4: ALU ...unsigned and signed arithmetic using binary numbers, the construction of adder circuits and subtraction circuits, and the analysis of a computer ALU is studied. (Prerequisite: 10-660-103, Digital 3: Registers)

10-660-114 DIGITAL 5: CHARACTERISTICS ...propagation delay, rise time, fall time, setup and hold time, asynchronous timing considerations, Schmitt trigger devices, one-shots and astable multivibrators, and synchronous counter design are studied. (Corequisite: 10-660-113, Digital 4: ALU)

10-662-112 DC/AC 3 ...apply Thevenin's and Norton's Theorems in practical problems involving complex AC circuits. Solve complex AC circuits using Mesh and Nodal techniques and describe power flow in complex AC circuits. (Prerequisite: 10-660-109, AC 3: RLC Circuits)

10-662-124 ELECTRONIC CIRCUIT ANALYSIS... develop equations for and analyze transistor amplifier circuits for bias, small signal gain, and transfer function including frequency response using Bode plot graphs of first order functions. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-804-181 CALCULUS 2 ...continuation of Calculus I covering integration techniques, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, Infinite series including Maclaurin, Taylor, and Fourier. (Prerequisite: 10-804-198, Calculus I with a "C" or better)

Electrical Power Distribution Program Code 314132 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Electrical Power Distribution prepares students to install, maintain, and operate electrical systems to supply electric energy to residential, commercial, and industrial customers, and joint gas and electric underground generation facilities.

Program Outcomes

- Assist in the construction of electric transmission systems.
- Opportunity to secure a (CDL) commercial driver's license.
- Relate electrical theory to electric power systems.
- Work comfortably at heights.
- Climb poles and towers.
- Be knowledgeable in personal protective equipment to safely perform specific work.
- Identify sub-station components.
- Install underground electric systems.
- Operate electrical power distribution equipment.
- Troubleshoot power distribution and transmission systems.
- Communicate technical information.
- Assist in the construction of power distribution systems.
- Identify methods of electrical generation.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be able to obtain a commercial driver's license.
- Place satisfactorily in the NWTC mathematics examination. Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment as a Line Technician, Lead Line Technician, Line Technician Supervisor, Cable TV Line Technician, Telephone Line Technician, Technician in an Electricity Generating Plant, or Installer/Maintainer of Underground Systems. Graduates in those jobs will perform construction, operations, and maintenance work on the electric power system and equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Line Coordinator
- Line Apprentice
- Safety Advisor
- Distribution Construction Designer
- Distribution Dispatcher
- Substation Electrician

Curriculum

Students following the study plan below will complete the Electrical Power Distribution technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
*10-890-101	College 101	1
31-413-330	Line Elec Field Trng 1	5
31-413-353	Electricity-Basic	1
31-413-362	Line Elec-Safety 1	1
31-804-312	Math-Algebra/Trades	1
SEMESTER TOTAL		9

SECOND SEMESTER		
10-103-121	Micro: Word-Intro	1
31-413-335	Line Elec-Const Standards	1
31-413-336	Line Elec Field Trng 2-A	5
31-413-337	Line Elec Field Trng 2-B	5
31-413-355	Electricity-Linepersons	2
31-413-364	Line Elec-Safety 2	1
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		16

THIRD SEMESTER		
10-103-131	Micro: Excel-Intro	1
31-413-332	Line Elec Field Trng 3	5
31-413-361	Lineman-Safety/First Aid	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		8
TOTAL CREDITS		33

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

Note
- Students who have completed the Electrical Power Distribution technical diploma program have the opportunity to fulfill the requirements for a Utility Management certificate and/or apply these credits toward a Leadership Development and/or an Individualized Technical Studies associate degree.
- Willingness to relocate may be an advantage for job opportunities.
- A clean driving record is required to obtain a CDL license.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-413-330 LINE ELECTRICIAN FIELD TRAINING 1 ...pole climbing, care of equipment/vehicle operation, setting and removing poles/line layout, pole framing, guys and anchors, conductor string, sagging, tying/transformers, operation, application, construction/safety.

31-413-332 LINE ELECTRICIAN FIELD TRAINING 3 ...protective grounds, transmission, substation operations and maintenance, metering tools, transmission hot stick use and safety, and stray voltage precautions, street lighting, and use of tree trimming methods and tools. (Prerequisite: 31-413-337, Line Electrician Field Training 2-B)

31-413-335 LINE ELECTRICIAN-CONSTRUCTION STANDARDS ...distribution standards for overhead, underground, primary, secondary, clearances, work practices, material and safe work practices.

31-413-336 LINE ELECTRICIAN FIELD TRAINING 2-A ...transformer installation, underground installation and equipment, operation and maintenance; protective equipment use; map/diagram reading, code clearance requirements. (Prerequisite: 31-413-330, Line Electrician Field Training 1)

31-413-337 LINE ELECTRICIAN FIELD TRAINING 2-B ...operation, maintenance; regular, capacitor and OCR operation and maintenance, and pole top and buck truck rescue techniques. (Corequisite: 31-413-336, Line Electrician Field Training 2-A)

31-413-353 ELECTRICITY-BASIC ...basic electricity: fundamental laws and circuit analysis. (Prerequisites: Accepted into Electrical Power Distribution)

31-413-355 ELECTRICITY-LINEPERSONS ...electric power/energy, three-phase voltage generation, three-phase circuit power, transformer operation principles, transformer connections, and safety practices in high voltage applications. (Prerequisite: 31-413-353, Electricity-Basic)

31-413-361 LINEMAN-SAFETY/FIRST AID ...first aid procedures, CPR, safety code analysis, recordkeeping, safety on the job, safety/accident analysis. (Prerequisite: Accepted into Electrical Power Distribution)

31-413-362 LINE ELECTRICIAN-SAFETY 1 ...general rules, definitions, applications, responsibility, reporting accidents, injuries, hand and power tools, ladders, scaffolds, handling materials, operation of company equipment. (Prerequisite: Accepted into Electrical Power Distribution; Corequisite: 31-804-312, Math-Algebra Trades)

31-413-364 LINE ELECTRICIAN-SAFETY 2 ...code and working clearances for electrical, line clearing, right-of-way maintenance, protective equipment, underground systems, and substations. (Prerequisite: 31-413-362, Line Electrician-Safety 1)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Electricity prepares students to install, maintain, and service basic electrical equipment used in residential, commercial, and industrial settings. The credits from this program are transferrable to the Construction Technology associate degree.

Program Outcomes

- Perform safe work practices.
- Apply National and Wisconsin State Electrical Codes to electrical installations.
- Install, maintain, and troubleshoot residential, commercial, and industrial electrical systems.
- Perform diagnostic testing on electrical systems.
- Apply basic calculations to electrical systems and installations.
- Demonstrate the operation of AC and DC motors.
- Install and troubleshoot basic motor control systems.
- Interpret electrical diagrams.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Place satisfactorily in the NWTC mathematics and algebra examinations.
- Students should have mastered high school algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems and measurements) and have a desire to learn advanced algebra and trigonometry.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Construction Electrician: installs and services conduit, wire, cable, and equipment in new and existing residential, commercial, and industrial structures.

Industrial Maintenance Electrician: installs, maintains, and troubleshoots motors, motor controls, lighting, and other electrical systems in an industrial plant.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Electrical Construction Supervisor
- Electrical Engineering Technician
- Journey-Level Electrician
- Electrical Contractor
- Electrical Maintenance Supervisor
- Voice Data Video Installer

Completers will be able to apply credits toward the following programs:

Curriculum

Students following the study plan below will complete the Electricity technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-413-314	DC Circuits	2
10-413-102	Residential Elec Code 1	2
10-413-317	Fundamentals of Electricity	2
10-413-319	Residential Wiring 1	3
10-413-103	Residential Elec Code 2	2
10-413-329	Residential Wiring 2	3
10-449-112	OSHA 30	1
*10-890-101	College 101	1
31-804-312	Math-Algebra/Trades	1
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-413-104	Industrial Code	2
10-413-105	Commercial Electrical Code	2
10-413-303	Industrial Controls	2
10-413-304	Electric Motor Control	2
10-413-327	Commercial Wiring Techniques	2
10-413-328	Motors/Transformers	2
10-413-334	AC Circuits	2
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**16**
TOTAL CREDITS		**33**

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

The credits from this program are transferrable to the Construction Technology associate degree.

- 10-475-2, Construction Technology

Note
- A "C" or better in BOTH 31-801-385, Communicating-Writing and 31-801-386, Communicating Effectively will satisfy the Construction Technology Associate Degree requirement for 10-801-196, Oral/Interpersonal Communication.
- A "C" or better in 31-804-312, Math-Algebra/Trades will satisfy the prerequisite to enroll in the Construction Technology Associate Degree course 10-804-107, College Mathematics.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-413-102 RESIDENTIAL ELECTRICAL CODE 1 ...National Electrical Code, residential circuits, conductor sizes, branch circuits, box fill calculations, switch control, branch circuit overcurrent protection and calculations, and ground fault circuit interrupters.

10-413-103 RESIDENTIAL ELECTRICAL CODE 2 ...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 10-413-102, Residential Electrical Code 1)

10-413-104 INDUSTRIAL CODE ...three-phase and single-phase systems, motor branch circuits, overcurrent and overload protections, power factor, hazardous locations, harmonics and National Electric Code. (Prerequisites: 10-413-102, Residential Elec Code 1; 10-413-103, Residential Elec Code 2; Corequisite: 10-413-105, Commercial Elec Code)

10-413-105 COMMERCIAL ELECTRICAL CODE ...commercial building plans and specifications, computing electrical loads and branch circuits, emergency systems, raceways, conduit fill, power and lighting circuits, motor & appliance circuits. (Prerequisite: 10-413-103, Residential Electrical Code 2)

10-413-303 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control (Corequisite: 10-413-345, Industrial Code)

10-413-304 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Corequisite: 10-413-303, Industrial Controls)

10-413-314 DC CIRCUITS ...electron theory, electromotive force sources, voltage, current, resistance, power, Ohm's Law, series-parallel circuits and test equipment. (Corequisites: 31-804-312, Math-Algebra/Trades; 10-413-317, Fundamentals of Electricity)

10-413-102 RESIDENTIAL ELECTRICAL CODE 1 ...National Electrical Code, residential circuits, conductor sizes, branch circuits, box fill calculations, switch control, branch circuit overcurrent protection and calculations, and ground fault circuit interrupters.

10-413-103 RESIDENTIAL ELECTRICAL CODE 2 ...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 10-413-102, Residential Electrical Code 1)

10-413-317 FUNDAMENTALS OF ELECTRICITY ...atomic structure, electrical quantities, Ohm's Law, magnetism, AC concepts. (Corequisite: 31-804-312, Math-Algebra/Trades)

10-413-319 RESIDENTIAL WIRING 1 ...residential electrical installation, national electrical code applications, residential circuits, box selection, conductor selector, receptacles, GFCI protection and switch control. (Corequisite: 10-413-102, Residential Elec Code 1, 10-449-112, OSHA 30)

10-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low-voltage wiring. (Corequisite: 10-413-105, Commercial Electrical Code OR 31-448-364, Marine Electrical Codes)

10-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Corequisite: 10-413-334, AC Circuits)

10-413-329 RESIDENTIAL WIRING 2 ...residential circuit installations, National Electrical Code, application of residential design and layout, small appliance circuits and special purpose outlets. (Corequisites: 10-413-319, Residential Wiring 1; 10-413-103, Residential Electrical Code 2, 10-449-112, OSHA 30)

10-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, diodes and silicon controlled rectifiers. (Corequisites: 10-413-314, DC Circuits, 31-804-312, Math-Algebra Trades)

10-449-112 OSHA 30 ...addresses OSHA 29CFR1926 rules and is approved by OSHA for construction workers, foremen, job supervisors, and anyone involved in construction trades. Successful participants receive 30-hour card from OSHA.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Electro-Mechanical Technology prepares students for employment as plant-floor and field service technicians who assemble, install, troubleshoot, repair and modify mechanical, electrical systems; including programmable controllers found on industrial machinery.

Program Outcomes

• Understand and apply knowledge of electricity, electronics, hydraulics, and electric motors and mechanics.

• Read technical drawings, schematics, and diagrams.

• Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.

• Perform electrical, mechanical, and fluid measurements by properly selecting tools and test equipment.

• Perform electrical/mechanical assembly/disassembly, repair, or calibrate components by properly selecting tools and equipment and following procedures.

• Understand the overall operation and control of machines.

• Understand the basic fastening skills related to machine fabrication and assembly requirements.

• Apply electrical skills to troubleshoot control and operator panels.

• Apply programming languages to the control of single programmable controllers and industrial networks.

• Apply critical thinking skills to solving problems.

• Effectively communicate and perform in a team environment.

• Perform safe work practices.

Requirements for Program Entry

• Completed application.

• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 80; Sentence Skills: 75; Elementary Algebra: 61. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan

students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

• Beginning courses require mastery of algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems, measurements).

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Automated Equipment Technician: maintains and repairs electronically-controlled automatic production equipment including servo hydraulics equipment, programmable controllers, motor controllers, and robotic equipment.

Electro-Mechanical Technician: maintains and repairs electro-mechanical equipment including drive systems, position sensors, cabling, and automatic production equipment; works with mechanical and/or electrical engineers to install and evaluate electro-mechanical systems; and builds mock-ups of production equipment.

Electronics Technician: maintains and repairs electronic equipment including cables, communication equipment, computers, security systems, and CNC equipment; works with electronics engineers in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services, repairs, and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

Fluid Power Technician: maintains and repairs industrial hydraulic/pneumatic production equipment, hydraulic/pneumatic control systems, hydraulic/pneumatic robots, and servo and proportional hydraulic systems.

Installation Technician: installs and sets up automated production equipment, robotic systems, and production control systems.

With additional education and/or work experience, graduates may find other opportunities for employment.

• Electro-Mechanical Service Supervisor
• Electro-Mechanical Shop Supervisor
• Electro-Mechanical Systems Test Engineer
• Field Service Supervisor
• Maintenance Group Manager
• Service Control Technician

The following certificates/technical diplomas may be applied toward this program:
• 904621, Industrial Maintenance Certificate

Curriculum

Students following the study plan below will complete the Electro Mechanical Technology associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-442-150	Machine Fabrication 1	1
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
10-809-198	Intro to Psychology	3
*10-890-101	College 101	1
SEMESTER TOTAL		**16**

SECOND SEMESTER

10-420-171	Machine Tool Processes 1	1
10-420-172	Machine Tool Processes 2	1
10-442-151	Machine Fabrication 2	1
10-620-140	Machine Wiring and Safety	1
10-660-101	Digital 1: Logic	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
SEMESTER TOTAL		**16**

THIRD SEMESTER

10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-620-123	Mechanics 3: Systems	1
10-620-159	Power Electronics 3: Drives	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-664-105	Automation 6: PLC	1
10-664-151	Automation 8: HMI	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-664-170	Safety Devices and Application	1
**10-801-136	English Composition 1	3
SEMESTER TOTAL		**17**

FOURTH SEMESTER

10-620-105	Rigging Systems 1	1
10-620-166	Fluids 4: Advanced Hydraulics	1
10-620-170	Robotics - Introduction to	1
10-620-172	Robotic Vision Systems	1
10-620-189	Machine Integrated Techniques	3
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**16**
TOTAL CREDITS		**65**

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program requirements.

** Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

SUGGESTED ELECTIVES

Automation CAD 1, 10-606-109
Automation CAD 2, 10-606-110

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-171 MACHINE TOOL PROCESSES 1 ...will expose learners to equipment used in manufacturing for repair and maintenance. Learners will safely demonstrate the operations performed on presses, lathes and mills. Instruction on inspection techniques using semi-precision and precision measuring tools.

10-420-172 MACHINE TOOL PROCESSES 2 ...equipment in manufacturing for repair and maintenance. Learn safe operation on presses, lathes, grinders and mills. Identify strategies and sequencing and material selection for machining. (Co-requisite: 10-420-171, Machine Tool Processes 1)

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-442-151 MACHINE FABRICATION 2 ...a study of fabrication processes including shears, saws, rolls, braces and benders. (Corequisite: 10-442-150, Machine Fabrication 1)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system.

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt drives, synchronous belt drives, lubrication, and alignment. (Corequisite: 10-620-121, Mechanics 1: Basic)

10-620-123 MECHANICS 3: SYSTEMS ...application of correct couplings to mechanical systems, heavy-duty chain drives, maintenance of brakes and clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-605-158, Power Electronics 2: Drives)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...single and 3-phase AC Induction motors, specialty motor performance and characteristics, and three-phase power systems.. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Corequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-620-166 FLUIDS 4: ADVANCED HYDRAULICS ...components of hydraulic pump power, characteristics of fluid conductors, issues of hydraulic system maintenance, basics of hydraulic flow and pressure in pipelines, design a hydraulic system from a specification.

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of industrial robots.

10-620-172 ROBOTIC VISION SYSTEMS ...setting up user frames, calibrating robot camera, identifying objects with robotic vision systems, creating programs using object identification.

10-620-189 MACHINE INTEGRATED TECHNIQUES ...application of machine fabrication techniques, automation products to manufacturing processes including PLC, drives, motors (Electric and Hydraulics), Sensors. (Prerequisites: 10-620-159, Power Electronics 3: Drives; 10-620-123, Mechanical 3: Systems; 10-620-162, Power Electricity 2: Motors; 10-664-151, Automation 8: HMI; 10-664-162, Control 3: Motion Systems)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC system, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Corequisite: 10-664-105, Automation 6: PLC)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisite:10-664-102, Automation 3: PLC OR 10-664-104, Automation 5: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC drive system performance, specification of AC and DC drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Corequisite: 10-664-163, Control 4: Drive Performance)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Corequisite: 10-664-164, Control 5: Servo Systems)

10-664-170 SAFETY DEVICES AND APPLICATIONS ...introduction to the function of commonly used machinery safety devices, wiring of these devices to complete safety circuits, overview of safety system design. (Prerequisites: 10-664-101, Automation 1: Control Logic)

Electronics (with optional Biomedical specialty)
Program Code 106051 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Electronics (with optional Biomedical specialty) program offers students the option between tracks specializing in biomedical or general electronics. The biomedical track prepares the student for a position as a technician for hospitals or medical equipment manufacturers. The general electronics track prepares the student to operate, test, maintain, and troubleshoot electronic equipment and work with research and design engineers.

Program Outcomes
• Describe the various digital modulation techniques.
• Identify power switching devices and circuits.
• Program microprocessor interface circuits.
• Measure electrical parameters of RF circuits.
• Describe wireless analog communication techniques.
• Implement a project using embedded computer systems.
• Measure wide-band circuit parameters.
• Describe transfer characteristics of frequency sensitive linear circuits.
• Analyze an ON/OFF machine control circuit.
• Predict operation of circuits containing active components.
• Identify the component and appropriate nomenclature of basic electronic symbols.
• Apply Boolean theorems to basic digital circuits.
• Apply circuit theorems to AC/DC RLC circuits.
• Use basic electronic tools.
• Work in teams.
• Develop an industry acceptable work ethic.
• Communicate both orally and in writing using common technical terminology.
• Write a technical document.
• Use office suite software package tools.
• Apply mathematics to the field of electronics.
• Use common test equipment to measure circuit parameters.
• Compare measured values to theoretical calculations.
• Practice workplace safety standards.
• Identify regulations and standards in communications related industries.

BIOMEDICAL SPECIALTY OUTCOMES
• Understand anatomy and medical terminology.
• Analyze, troubleshoot and calibrate biomedical electronics equipment.
• Identify regulations and standards in health related industries.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 80; Sentence Skills: 75; Elementary Algebra: 61. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982
• Beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground. com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Electronic Development Technician: assists engineers in the design and development of experimental and prototype electronic equipment and products.

Electronic Maintenance Technician: services and programs in-plant automatic control equipment, computers, robots, and other electronic equipment.

Electronic Test Technician: tests, troubleshoots, and inspects electronics products (quality control testing).

Electronics Technician: maintains electronic equipment including motor controllers, cables, communication equipment, computers, security systems, CNC equipment, programmable controllers, robots, and automatic production equipment; works with an electronics engineer in building breadboard and prototype devices; and evaluates and tests electronic devices and systems.

Field Service Technician: services and overhauls equipment in the customer's facility; works with sales personnel; and demonstrates new equipment to potential customers.

Biomedical Equipment Technician, also called Biomedical Engineering Technicians or BMETs: constructs, tests, repairs, and maintains electromedical equipment of all sorts, including electrosurgical equipment, cardiovascular equipment, kidney dialysis machines, respirators, vital signs data equipment, telemetry transmitters and receivers, radiology equipment and nuclear medicine equipment.

With additional education and/or work experience, graduates may find other opportunities for employment:
• Computer Field Service Supervisor
• Electronics Production Superintendent
• Electronics Maintenance Supervisor

The following certificates/technical diplomas may be applied toward this program:
• 906052, Biomedical Electronics

Additional Requirements for Students Pursuing the Biomedical Track
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27.) The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into health programs must complete a background information form disclosing any acts, crimes, or convictions prior to program entry. The information provided in the background information form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to clinical placement at the discretion of the clinical site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical placement, or guarantee graduation.

Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

ALL STUDENTS COMPLETE FIRST SEMESTER

10-660-100	Electronic Fabrication - Intro	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-103	Digital 3: Registers	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Circuit Theorems	1
10-804-118	Interm Algebra w Apps	4
10-809-199	Psychology Of Human Relations	3
*10-890-101	College 101	1
TOTAL CREDITS		**15**

ELECTRONICS TECHNOLOGY FIRST SEMESTER

10-820-140	Machine Wiring and Safety	1
10-809-166	Intro to Ethics: Theory & App	3
TOTAL CREDITS		**4**

BIOMEDICAL TECHNOLOGY FIRST SEMESTER

**10-806-134	General Chemistry	4
TOTAL CREDITS		**4**

ALL STUDENTS COMPLETE SECOND SEMESTER

10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-660-111	Electronics 2: Trans-Basic	1
10-660-112	Electronics 3: Op-Amps-Basic	1
10-660-113	Digital 4: ALU	1
10-660-114	Digital 5: Characteristics	1
10-804-196	Trigonometry w Apps	3
10-809-172	Intro to Diversity Studies	3
TOTAL CREDITS		**14**

ELECTRONICS TECHNOLOGY SECOND SEMESTER

	Elective	3
TOTAL CREDITS		**3**

BIOMEDICAL TECHNOLOGY SECOND SEMESTER

**10-501-101	Medical Terminology	3
TOTAL CREDITS		**3**

ALL STUDENTS COMPLETE THIRD SEMESTER

10-605-160	Linear Electronics 1: BJT Amps	1
10-605-161	Linear Electronics 2: JFET Amp	1
10-605-162	Linear Electronics 3: Filters	1
10-605-163	Micro 1: Introduction	1
10-605-164	Micro 2: Technique	1
10-605-165	Micro 3: Interfaces	1
10-605-170	Datacomm 1: Introduction	1
10-605-171	Datacomm 2: Pulse Code Mod	1
10-605-172	Datacomm 3: Delta Modulation	1
***10-801-136 English Composition 1		3
TOTAL CREDITS		**12**

ELECTRONICS TECHNOLOGY THIRD SEMESTER

10-806-143	College Physics 1	3
TOTAL CREDITS		**3**

BIOMEDICAL TECHNOLOGY THIRD SEMESTER

**10-806-189	Basic Anatomy	3
TOTAL CREDITS		**3**

ALL STUDENTS COMPLETE FOURTH SEMESTER

10-605-169	Electronics Design Integration	3
10-605-174	Datacomm 5: Fiber Optics-Intro	1
10-605-175	Datacomm 6: Fiber Optics-Adv	1
10-605-180	Analog Comm 1: Noise Effects	1
10-605-181	Analog Comm 2: AM/SSB	1
10-605-182	Analog Comm 3: FM Systems	1
10-897-197	Technical Reporting	3
10-809-195	Economics	3
TOTAL CREDITS		**14**

ELECTRONICS TECHNOLOGY FOURTH SEMESTER

10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-605-173	Datacomm 4: Digital Modulation	1
10-620-159	Power Electronics 3: Drives	1
TOTAL CREDITS		**4**

BIOMEDICAL TECHNOLOGY FOURTH SEMESTER

**10-605-106	Biomed Electronics 1	1
**10-605-107	Biomed Electronics 2	1
**10-605-108	Biomed Electronics 3	1
**10-605-109	Biomed Electronics 4	1
TOTAL CREDITS		**4**
TOTAL PROGRAM CREDITS		**69**

CURRICULUM NOTE
* The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program requirements.

** In order to successfully complete the Biomedical track, no final grade lower than a ICI is acceptable in any of the courses marked with double asterisk.

*** Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

SUGGESTED ELECTIVES
Automation 3: PLC, 10-664-102
Automation 4: PLC, 10-664-103
Control 1: Discrete Systems, 10-664-160
Control 2: Process Systems, 10-664-161
Control 3: Motion Systems, 10-664-162
Control 4: Drive Performance, 10-664-163
Control 5: Servo Systems, 10-664-164
Control 6: Servo Systems, 10-664-165

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-605-106 BIOMED ELECTRONICS 1: SIGNALING ...the study will present the characteristics of biomedical electronics signaling and provide a survey of biomedical electronics signaling systems. (Prerequisites: 10-605-162, Linear Electronics 3: Filters; 10-605-172, Datacomm 3: Delta Modulation)

10-605-107 BIOMED ELECTRONICS 2: INSTRUMENTATION ...study will present the characteristics of biomedical electronics instrumentation and provide a survey of biomedical electronics instrumentation. (Prerequisite: 10-605-106, Biomed Electronics 1)

10-605-108 BIOMED ELECTRONICS 3: NETWORKING ...study will present the characteristics of biomedical electronics networking and provide a survey of biomedical electronics networking systems. (Prerequisite: 10-605-107, Biomed Electronics 2)

10-605-109 BIOMED ELECTRONICS 4: CALIBRATION ...study will present the characteristics of biomedical electronics calibration and provide a survey of biomedical electronics calibration. (Prerequisite: 10-605-108, Biomed Electronics 3)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-605-160 LINEAR ELECTRONICS 1: BJT AMPLIFIERS ...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers. (Prerequisites: 10-660-109, AC 3: RLC Circuits; 10-660-112, Electronics 3: Op-Amps-Basic)

10-605-161 LINEAR ELECTRONICS 2: JFET AMPLIFIERS ...characteristics of the junction field-effect (JFET) transistor amplifier and types of commonly used field effect transistor amplifiers. (Corequisite: 10-605-160, Linear Electronics 1: BJT Amplifiers)

10-605-162 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS ...review the characteristics of the passive RL, RC, RLC active filters. Introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-163 MICROPROCESSORS 1: INTRODUCTION ...use of simulation software, fundamentals of C language programming, basic logic and control, analog and digital inputs, flowcharting, motor control, objects, and PWM techniques.

10-605-164 MICROPROCESSORS 2: TECHNIQUE ...bitwise operations, pseudo-ops, more C: programming techniques, LCD display, control logic, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-165 MICROPROCESSORS 3: INTERFACES ...more C language programming for arrays, logic and control, scaling, input and output, software standards, and continued use of simulation software. (Prerequisite: 10-605-164, Micro 2: Technique)

10-605-169 ELECTRONICS DESIGN INTEGRATION ...design, coordinate, and apply electrical, electronics, and/or microprocessor skills into an integrated final project. (Prerequisites: 10-605-165, Micro 3: Interfaces; 10-605-162, Linear Electronics 2:Filters; 10-605-172, Datacomm 3: Delta Modulation)

10-605-170 DATACOMM 1: INTRODUCTION ...introduction to pulse amplitude modulation, pulse amplitude modulation principles, sampling and signal reconstruction, and and pulse code modulation. (Prerequisite: 10-660-103, Digital 3: Registers)

10-605-171 DATACOMM 2: PULSE CODE MODULATION ...introduction to time division multiplexing pertaining to pulse amplitude modulation and pulse code modulation, sampling and signal reconstruction, analog to digital conversation, digital to analog conversion, amplitude shift keying, and error detection techniques. (Prerequisite: 10-605-170, Data Comm 1: Introduction)

10-605-172 DATACOMM 3: DELTA MODULATION ...introduction to delta modulation, delta modulation principles, sampling and signal reconstruction, frequency shift keying, phase shift keying, and pseudo code generation. (Prerequisite: 10-605-171, Data Comm 2: Pulse Code)

10-605-173 DATACOMM 4: DIGITAL MODULATION ...introduction to digital modulation, line coding and synchronization, principles of differential phase shift keying, spread spectrum techniques, and bit error measurement. (Prerequisite: 10-605-172, Datacomm 3: Delta Modulation)

10-605-174 DATACOMM 5: FIBER OPTICS-INTRODUCTION ...introduction to fiber optic signal processing, transmission, and reception. (Corequisite: 10-605-172, Data Comm 3: Delta Modulation)

10-605-175 DATACOMM 6: FIBER OPTICS-ADVANCED ...advanced demonstration of skills required to analyze and troubleshoot fiber optic signal processing, transmission, and reception. (Corequisite: 10-605-174, Datacomm 5: Optics-Introduction)

10-605-180 ANALOG COMMUNICATIONS 1: NOISE EFFECTS ...characteristics of noise in communications systems and analyze amplitude modulation. (Prerequisite: 10-605-162, Linear Electronics 3: Filters)

10-605-181 ANALOG COMMUNICATIONS 2: AM/SSB ...characteristics of single sideband transmission and receiving systems. (Prerequisite: 10-605-180, Analog Comm 1: Noise Effects)

10-605-182 ANALOG COMMUNICATIONS 3: FM SYSTEMS ...characteristics of frequency modulation transmission and receiving systems. (Prerequisite: 10-605-181, Analog Comm 2: AM/SSB)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-605-158, Power Electronics 2: Drives)

10-660-100 ELECTRONIC FABRICATION - INTRO TO ...the study will include an introduction to electronics fabrication techniques, including basic soldering and assembly, and an overview of connectors and printed circuit board construction.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1: Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze asynchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Corequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Corequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-660-112 ELECTRONICS 3: OP-AMPS-BASIC ...introduction to the circuit characteristics of integrated operational amplifiers. The various connections, inverting, non-inverting and comparator will be studied as well as specialized applications such as summers and filters. (Corequisite: 10-660-111, Electronics 2: Transistor-Basic)

10-660-113 DIGITAL 4: ALU ...unsigned and signed arithmetic using binary numbers, the construction of adder circuits and subtraction circuits, and the analysis of a computer ALU is studied. (Prerequisite: 10-660-103, Digital 3: Registers)

10-660-114 DIGITAL 5: CHARACTERISTICS ...propagation delay, rise time, fall time, setup and hold time, asynchronous timing considerations, Schmitt trigger devices, one-shots and astable multivibrators, and synchronous counter design are studied. (Corequisite: 10-660-113, Digital 4: ALU)

Emergency Medical Technician (EMT)
Program Code 305313 | Technical Diploma

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description
Emergency Medical Technician (EMT) students perform emergency patient care and basic life support skills in compliance with the Wisconsin scope of practice including the transport of injured and ill patients to hospital emergency departments.

Program Outcomes
- Apply preparatory aspects of emergency care.
- Perform airway management.
- Perform patient assessment.
- Manage medical, behavioral, and trauma patients.
- Adapt principles to pediatric cases.
- Perform field operations.

Requirements for Program Entry
- Approved CPR certification as outlined under WI Chapter DHS 110. Students are required to maintain a current CPR status to comply with affiliating agency requirements throughout the duration of this program.
- Proof of current health status and immunizations.
- NWTC is required to comply with the Wisconsin Caregiver Law.
- Aptitudes required for work of this nature are good physical stamina, endurance, and body condition that would not be adversely affected by frequently having to walk, stand, life, carry, and balance at times, in excess of 125 pounds.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Curriculum
Students following the study plan below will complete the Emergency Medical Technician technical degree in the number of semesters shown.

FIRST SEMESTER	CREDITS
*10-531-102 Emergency Medical Technician	5
SEMESTER TOTAL	5
TOTAL CREDITS	5

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed only after successful completion of the licensing examination and application for a state license.

Employment Potential
A graduate with an Emergency Medical Technician Technical Diploma will have the potential for employment as an Emergency Medical Technician (EMT). Ambulance services in Wisconsin are volunteer, private, fire based or hospital based.

Note
- Completion of 10-531-108, Medical First Responder, prior to program entry is highly recommended.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-531-102 EMERGENCY MEDICAL TECHNICIAN ...preparatory aspects, airway management, patient assessment, medical/behavioral cases, trauma care, pediatric cases, and field operations in basic life-support emergency medical care. (Prerequisite: Accepted into EMT program)

Energy Management Technology
Program Code 104813 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Energy Management Technology prepares students with the skills and knowledge needed to enter and advance in the field of energy management. Emphasis will be placed on application of basic principles of physics, electro-mechanical technology and analysis of the description and measurement of energy in today's building systems.

Program Outcomes

- Evaluate the energy use patterns for commercial building and recommend energy efficiency and alternative energy solutions for high-energy consuming buildings.

- Troubleshoot, upgrade and maintain the Energy Management Systems (EMS); perform data recovery and backup duties.

- Monitor the efficiency of energy management operations, detecting, where possible, equipment failures.

- Construct energy evaluation technical reports and make presentations for potential project implementation.

- Upload and download information from remote and local networks to aid in the efficiency of energy management.

- Enhances energy management software and prepare program documentation and flow charts.

- Read and comprehend mechanical blueprints and control drawings.

- Respond to calls for heating, ventilating, air conditioning, and exterior lighting service independently; and determine whether to dispatch appropriate staff or to resolve problems remotely via the energy management system.

- Assist in the writing of specifications for additional energy management systems.

- Write technical proposals for energy projects.

- Provide training to campus users and facilities operations staff.

Requirements for Program Entry

- Completed application.

- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)

- Courses required for mastery of

algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems and measurements).

- The student will either provide proof of having completed course work in Windows, Word and Excel or pass a proficiency test.

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Elementary Algebra: 61; Reading Comprehension: 80; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment for such diverse employers as engineering firms, public and private utilities, energy equipment companies, HVACR contractors and departments of energy in the following areas:

Energy Auditor: conducts facility energy audits/assessments and completes data collection to identify energy efficiency improvement opportunities and complete recommendations for energy conservation measures.

Energy Management Consultant: conducts facility energy audit/assessments and is responsible for making recommendations regarding energy efficiency improvement opportunities. Prepares cost estimates, energy analysis and is accountable for building long term customer relationships.

Energy Program Coordinator: evaluates the energy use patterns for buildings and recommends energy efficiency and alternative energy solutions. Develops and implements a comprehensive energy program. Works with administrative and facilities management to implement programs.

Control System Specialist: analyzes heating, cooling and ventilating systems to determine optimum operating conditions and procedures. Assists in the design and development of new or modified HVAC systems to achieve uniformity.

Curriculum

Students following the study plan below will complete the Energy Management Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-480-101	Energy-Intro Renew & Sustain	4
10-481-114	Intro to Energy Management	3
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-804-118	Interm Algebra w Apps	4
10-806-143	College Physics 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-103-131	Micro: Excel-Intro	1
10-196-187	Project Management	1
10-481-106	Intro to Water Resources	2
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-102	Automation 3: PLC	1
**10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
SEMESTER TOTAL		**17**

THIRD SEMESTER		
10-403-100	Blueprint Reading Intro	1
10-481-109	Commercial HVACR Analysis	3
10-481-111	Energy Control Strategies	3
10-481-115	Lighting Fundamentals	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**17**

FOURTH SEMESTER		
10-481-107	Building Energy Simulation	3
10-481-108	Commercial Energy Analysis	3
10-481-110	Energy Accounting	2
10-481-113	Energy Investment Analysis	3
10-801-197	Technical Reporting	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**68**

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

**Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Facility Manager
- Certified Energy Manager
- Building Manager
- Energy Engineer
- Environmental Consultant

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-196-187 PROJECT MANAGEMENT ...the role of project management, developing a project proposal, use of relevant software, working with project teams, sequencing tasks, charting progress, dealing with variations, budgets and resources, implementation, and assessment.

10-403-100 BLUEPRINT READING INTRO ...develop the knowledge skills process and understanding of site plans, footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, lighting, ventilating, and air conditioning.

10-480-101 ENERGY-INTRO RENEW & SUSTAIN ...an overview of various renewable energy technologies and sustainable design practices and their current applications. Emphasis will be placed on policies, renewable energy production, green products and jobs.

10-481-106 INTRO TO WATER RESOURCES ...properties of water, basic hydrology, water quality; water consumption standards related to energy; stormwater, wastewater and drinking water; water supply and demand management as well as emerging issues. (Prerequisites: 10-481-114, Intro to Energy Management)

10-481-107 BUILDING ENERGY SIMULATION ...course covers the variety of computer programs available for analyzing the energy performance of commercial buildings including BIN methodology, hourly simulations and an overview of current programs on the market such as RETScreen and eQuest. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies; 10-481-115, Lighting Fundamentals)

10-481-108 COMMERCIAL ENERGY ANALYSIS ...emphasis is on the analysis of energy use in commercial buildings including utility bill analysis, audit data, identifying energy efficiency measures, energy savings and investment calculations, audit report writing. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Fundamentals)

10-481-109 COMMERCIAL HVACR ANALYSIS ...identify commercial HVAC system types and the general energy use impact of each type. Calculations of system equipment efficiencies will be used to determine EER, SEER, AFUE, COP, combination and seasonal efficiency in boilers, balance point partial efficiency, BIN analysis. (Prerequisites: 10-481-114, Intro to Energy Management)

10-481-110 ENERGY ACCOUNTING ...review of energy units, data gathering for energy accounting utility rates and schedules, energy data organization, adjusted baselines, cost avoidance, load factor, data analysis, data presentation, use of utility energy accounting software. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Fundamentals)

10-481-111 ENERGY CONTROL STRATEGIES ...topics include building system control concepts and devices; including electric, pneumatic and digital controls, emphasis is placed on identifying and understanding control strategies related to energy using systems and methods to estimate energy savings. (Prerequisite: 10-481-114, Intro to Energy Management)

10-481-113 ENERGY INVESTMENT ANALYSIS ...emphasis on simple payback and life-cycle cost analysis, time value of money, cash flow equivalence, cost-benefit analysis, tax credits, depreciation, inflation and/or escalating fuel costs on energy investments and cost estimating. (Prerequisites: 10-481-109, Commercial HVACR Systems Analysis; 10-481-111, Energy Control Strategies, 10-481-115, Lighting Applications)

10-481-114 INTRO TO ENERGY MANAGEMENT ...introduces the basic concepts of energy, utility systems and utility rate structures; defines the need for energy management as an integral part of society at all levels. The course will present the various opportunities available to energy management students.

10-481-115 LIGHTING FUNDAMENTALS ...light sources, luminaries, lighting controls, manufacturer lamp and ballast specifications, lighting power density, lighting-HVAC interactions, retrofit opportunities, cost savings analysis and lighting codes/regulations. Students will critically evaluate lighting systems, luminaries and associated components. Understand and perform various types of lighting calculations. (Prerequisite: 10-481-114, Intro to Energy Management)

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...single and 3-phase AC Induction motors, specialty motor performance and characteristics, and three-phase power systems.. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interm Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisite: 10-664-102, Automation 3: PLC OR 10-664-104, Automation 5: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

Environmental Engineering- Waste & Water Technology

Program Code 105062 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Environmental Engineering-Waste and Water Technology program prepares learners to maintain the quality of water, air, waste, and other materials, through testing, analysis, and monitoring to keep the environment and community healthy and safe. This program will meet a need for environmental engineering technicians in Northeast Wisconsin.

Program Outcomes

- Identify, monitor and evaluate environmental hazards
- Examine the effects of pollution
- Determine strategies to minimize or prevent waste in order to reduce impact on the environment
- Create and maintain environmental reports in accordance with applicable standards
- Utilize applied science and mathematical skills to modify test and operate equipment used in the prevention, control and remediation of environmental issues, including waste and water treatment
- Perform periodic inspections in compliance with applicable standards
- Use effective oral and written communication skills
- Utilize problem solving skills
- Perform safe work practices

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses required for mastery of algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems and measurements).
- The student will either provide proof of having completed course work in Windows, Word and Excel or pass a proficiency test.
- As a requirement for program entry, an

Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are College Math: 63; Reading Comprehension: 80; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment for diverse employers such as industrial facilities, municipalities, utilities and governmental agencies in the following areas:

Recycling coordinators establish, coordinate, and promote recycling programs and operations often turning old products and waste from industrial processes into useful, environmentally safe raw materials.

Environmental Engineering Technicians apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under the direction of engineering staff or scientist. May assist in the development of environmental remediation devices.

Recycling and Resource Manager utilizes best management practices to manage organizational resources and recycling and resource programs impacting the culture, community and business practices of an organization.

Water and Waste Water Treatment Plant and System Operators, operate or control an entire process or system of machines, often through the use of control boards, to transfer to treat water or wastewater.

Water Resource Specialists design and implement programs and strategies related to water resource issues such as supply, quality, and regulatory compliance issues.

Curriculum

Students following the study plan below will complete the Environmental Engineering-Waste & Water Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-403-100	Blueprint Reading Intro	1
10-506-146	Intro to Environmental Science	3
10-506-147	Environmental Biology	4
10-804-118	Interm Algebra w Apps	4
10-806-134	General Chemistry	4
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-506-148	Environmental Chem Analysis	4
10-506-149	Intro to Environ Compliance	3
10-614-113	2D Essentials	2
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
**10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-506-150	Environmental Microbiology	3
10-506-151	Wastewater Treatment & Analys	4
10-506-152	Ind. Safety & Emerg. Response	3
10-606-113	CAD	2
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-801-197	Technical Reporting	3
SEMESTER TOTAL		19

FOURTH SEMESTER		
10-506-154	Air Pollution Control Systems	3
10-506-155	Water Treatment & Analysis	4
10-506-156	Solid and Hazardous Waste	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16
TOTAL CREDITS		70

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

** Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Environmental Engineer
- Environmental Health and Safety Manager

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-403-100 BLUEPRINT READING INTRO ...develop the knowledge skills process and understanding of site plans, footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, lighting, ventilating, and air conditioning.

10-506-146 INTRO TO ENVIRONMENTAL SCIENCE ...an introduction to the basic principles of environmental science including ecology, energy, resources, waste management, air, water, and soil pollution.

10-506-147 INTRO TO ENVIRONMENTAL BIOLOGY ...environmental problems are examined from scientific, ethical, economic and sociological perspectives. Emphasis is placed on protection of the human environment with discussion of environmental issues and environmentally related public health concerns.

10-506-148 ENVIRONMENTAL CHEM ANALYSIS ...laboratory techniques are performed to determine the suitability of supply sources and purification processes in the water and wastewater industries. (Prerequisite: 10-806-134, General Chemistry)

10-506-149 INTRO TO ENVIRONMENTAL COMPLIANCE ...an introduction to regulatory concepts and requirements for compliance with environmental regulations by governmental and non-governmental entities.

10-506-150 ENVIRONMENTAL MICROBIOLOGY...a study of the background and role of bacterial analysis. Sampling and analytic methods including quality control procedures and environmental parameters are studied and related to applicable standards. (Prerequisite: 10-506-147, Environmental Biology)

10-506-151 WASTEWATER TREATMENT & ANALYSIS ...physical, chemical, and biological principles of operation of wastewater treatment systems. The basic unit processes, control parameters, and mathematical problem-solving related to collection systems and treatment facilities are introduced. Laboratory procedures and practices involved with operation of wastewater analysis and treatment including industrial waste treatment technologies. (Prerequisite: 10-506-148, Environmental Chem Analysis)

10-506-152 INDUSTRIAL SAFETY & EMERGENCY RESPONSE ...state and federal regulations related to worker safety, industrial hygiene, and response to emergency situations. Emphasis is placed on response to releases of hazardous materials.

10-506-154 AIR POLLUTION CONTROL SYSTEMS ... air quality problems, federal and state regulatory mechanisms, and the types of emission control technology currently available. Monitoring emissions and ambient air quality are addressed.

10-506-155 WATER TREATMENT & ANALYSIS ... Physical, chemical, and biological principles of operation of water treatment systems. The basic unit processes, control parameters, and mathematical problem-solving related to treatment facilities and distribution systems are introduced. Laboratory procedures and practices involved with operation of water analysis and treatment. (Prerequisite: 10-506-148, Environmental Chem Analysis)

10-506-156 SOLID AND HAZARDOUS WASTE ...identify the hierarchy of and regulations related to solid and hazardous waste, the waste stream, pollution prevention and disposal strategies. Learn detection techniques and proper transporting and handling methods.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-113, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-614-113 2D ESSENTIALS ... an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt drives, synchronous belt drives, lubrication, and alignment. (Corequisite: 10-620-121, Mechanics 1: Basic)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Corequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

Farm Business & Production Management

Program Code 300901 | Technical Diploma

For information, call the Green Bay campus: (920) 498-5444. Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description

Farm Business and Production Management covers basic farming production and business management principles needed to be an efficient farmer. Formal classes are delivered District-wide at locations convenient for the farmers.

Program Outcomes

- Calculate farm business cost of production for forage, grain, beef, pork, and milk.
- Prepare and assess a livestock management plan that is environmentally friendly.
- Prepare and assess a business financial plan.
- Develop and assess a soil and crop management plan that is environmentally friendly.
- Own, operate, and/or be employed in an agriculture-related industry.
- Implement a business, soil, crop, and livestock management plan that is environmentally friendly.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Communications: ability to listen, write complete sentences, spell accurately, and express ideas well verbally.
- Science: basic plant and animal biology, chemistry, and applied physics.
- Ability to use computer operating skills: keyboarding at 30 words per minute.
- Students should have mastered basic math skills. Basic math is defined as addition, subtraction, multiplication and division.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 34; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have basic skills necessary to own and operate or be employed on a farm.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Dairy Herdsperson
- General Farm Manager
- Farm Records Manager
- Crop Supervisor
- Livestock Feeding Specialist
- Farm Equipment and Facilities Maintenance Manager
- Farm Service Employee
- Field Equipment Operator

Note
Tuition assistance is available through the Wisconsin Dept. of Agriculture and the Wisconsin Technical College Categorical Funding Tuition Assistance Grant; other local scholarships are available.

Curriculum

The Farm Business and Production Management Technical Diploma is a six-year, part-time program. Upon graduation, a student will have completed 24 credits.

FIRST SEMESTER		CREDITS
30-090-387	Farm Record/Business Analysis	4
30-090-388	Crop Management	4
30-090-391	Livestock Management	4
30-090-392	Livestock Nutrition	4
30-090-393	Soil Management	4
30-090-394	Farm Business Operation	4
SEMESTER TOTAL		24
TOTAL CREDITS		24

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-090-387 FARM RECORD/BUSINESS ANALYSIS ...Farm Business mission, objectives, goals, use of farm credit, farm business arrangements, orderly farm transfer, farm estate planning, farm income tax preparation, computer records and Farm Business Analysis.

30-090-388 CROP MANAGEMENT ...economics, alternative crop strategies, production management, variety selection, maintenance fertilization, pest controls and weed chemicals, harvesting, storage, marketing and farm business analysis, specialty crops, government programs and developing crop budgets.

30-090-391 LIVESTOCK MANAGEMENT ...livestock selection, breeding management, herd health, young stock management, selection, operation and maintenance of milking, feeding, ventilation and manure handling systems, farm buildings, feed storage and farm business analysis.

30-090-392 LIVESTOCK NUTRITION ...nutritional terminology feeding management, economics of feeds, nutritional terminology requirements for maintenance, estimating feed consumption, feed tag labels for protein, energy, minerals and vitamins, evaluate feeding programs and metabolic diseases.

30-090-393 SOIL MANAGEMENT ...preparing and implementing a land use plan, soil testing procedures and reports, corrective fertilizers, soil conservation, tillage operations, nutrient management plan and implementations Farm Business business analysis.

30-090-394 FARM BUSINESS OPERATION ...farm organization, budgeting, cash flow, financial statements, record keeping systems, tax issues, business structure for farm operation, credit needs, farm business analysis, farm safety, employee management, marketing plan.

Financial Institutions Management
Program Code 101144 | Associate Degree

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Financial Institutions Management is designed for current or prospective employees of financial institutions seeking specialized training.

Program Outcomes
- Analyze business and consumer financial documents.
- Ensure compliance with state and federal laws.
- Recommend appropriate financial products to customers.
- Use personal financial planning techniques.
- Assess how economic policies and changes in the level of business activity affect the financial industry.
- Make loan decisions.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Manage the work of other people in a team environment.
- Perform basic business math calculations.
- Deliver effective customer service.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Basic math (whole numbers, fractions, decimals, percents, measurements).
- Ability to use computer keyboard.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension:

55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
The curriculum is structured to provide a climate for the development of the functional skills needed by participants from entry-level through senior management.

A graduate of this program will have the potential for employment in the following areas:

Customer Service Representative (CSR): a primary contact person for customer services, identifies additional and appropriate financial services, guiding customers to the proper departments for specific products, and holds an influential position within a team environment.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Commercial Banker
- Bank Officer

Note
- Learners interested in double majoring in Accounting or Credit Business Management should consult with an instructor.
- Refer to the program website for information on accelerated learning and for helpful tips that will assist you in achieving the highest quality and most rewarding academic experience.
- Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

Curriculum
Students following the study plan below will complete the Financial Institutions Management associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-101-110	Accounting 1	4
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-132	Micro: Excel-Part 2	1
10-114-111	Credit-Consumer	4
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER

10-102-150	Business Law & Ethics	3
10-114-151	Finance-Banking Principles	3
10-114-166	Credit-Collection Methods	3
10-114-167	Finance-Commercial Lending	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-114-101	Credit-Business Applications	3
10-114-153	Finance-Personal	3
10-114-170	Credit-Law	3
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		15

FOURTH SEMESTER

10-114-125	Finance-Mortgage Lend/Serv	3
10-114-155	Finance-Trust Functions/Serv	3
10-114-180	Finance-Money/Banking	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
	Elective	2
SEMESTER TOTAL		17
TOTAL CREDITS		68

CURRICULUM NOTE
The courses beginning with course numbers 10-114-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students are expected to do most assignments outside of class time.

Core courses are primarily offered during the evening.

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES
Any course in the Credit Business Management or Accounting program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-110 ACCOUNTING 1 ...accounting principles, financial statements, business transactions, accounting cycles/systems, specialized journals, accounting for cash and receivables for sole proprietorships in service or merchandising businesses.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequisite: 10-103-131, Micro: Excel-Intro)

10-114-101 CREDIT-BUSINESS APPLICATIONS ...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, breakeven, depreciation, gain/loss, and inventory. (Prerequisite: 10-101-110, Accounting 1)

10-114-111 CREDIT-CONSUMER ...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-114-125 FINANCE-MORTGAGE LENDING/SERVICING ...principles and practices involved in making and closing mortgage loans and servicing a sound mortgage portfolio, including the secondary mortgage market. (Prerequisite: 10-114-111, Credit-Consumer)

10-114-151 FINANCE-BANKING PRINCIPLES ...U.S. banking history, organization, the Federal Reserve System, deposit functions, security issues, payment flow, credit functions, accounting, specialized services, marketing, and current issues and trends.

10-114-153 FINANCE-PERSONAL ...income and occupations, financial spending plan development, purchasing consumer goods and services, risk management plan development, investment plan development, retirement and estate planning, and financial advising.

10-114-155 FINANCE-TRUST FUNCTIONS/SERVICE ...trust functions; estate settlement; guardianships; trust services; performance of agencies, individuals, business organizations, charitable institutions; and trust administration.

10-114-166 CREDIT-COLLECTION METHODS ...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Corequisite: 10-114-167, Finance-Commercial Lending or 10-114-109, Credit-Policies/Procedures)

10-114-167 FINANCE-COMMERCIAL LENDING ...functions of the loan interview and credit investigation, elements of the loan document and its loan functions, the structuring of commercial loans, and federal and state laws governing commercial lending. (Prerequisite: 10-114-111, Credit-Consumer)

10-114-170 CREDIT-LAW ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-114-167, Finance-Commercial Lending or 10-114-109, Credit-Policies/Procedures; 10-801-136, English Composition 1)

10-114-180 FINANCE-MONEY/BANKING ...economics and banking, commercial banking system, money supply, investments and loans, Federal Reserve System, and international monetary system. (Prerequisites: 10-809-195, Economics; 10-103-131, Micro: Excel-Intro; 10-114-111, Credit-Consumer; 10-804-123, Math w Business Apps)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The graduate of the Fire Medic AAS degree program is cross-trained in fire protection/fire suppression and emergency medical services (EMS) at the advanced life support (ALS)/paramedic level.

The Fire Medic is assigned primarily to fire-based EMS agencies (airport public safety departments, industrial fire/safety teams, rural/volunteer or urban/career fire departments). The Fire Medic is trained to respond to out-of-hospital medical/trauma emergencies, fire or HAZMAT emergencies, mass casualty incidents and/or special rescue operations in a community served by a full-time fire department.

Program Outcomes

- Prepare for incident response and EMS/Fire operations.
- Integrate pathophysiology principles and assessment findings for a variety of patient encounters.
- Demonstrate paramedic and fire protection skills associated with established standards and procedures for a variety of emergency based encounters.
- Communicate clearly and effectively both verbally and through written documentation with clients, coworkers, other agencies, and supervisors.
- Demonstrate professional behavior.
- Meet Wisconsin state and national competency requirements for paramedic and fire credentialing.
- Demonstrate professional conduct by displaying personal code of ethics, positive work ethics, flexibility, teamwork skills, physical fitness, safe procedures, and sensitivity to diverse cultures and individuals.
- Perform fire prevention activities including preplanning, public education, inspection, and investigation.
- Apply incident management and mitigation skills to emergency incidents.
- Apply critical thinking skills to both emergency and non-emergency situations.

Requirements for Program Entry

- Currently licensed as an EMT in the state of Wisconsin
- Maintain a current AHA Healthcare Provider CPR card on a two-year renewal cycle to comply with affiliating agency requirements
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- NWTC is required to comply with the Wisconsin Caregiver Law. For the most current information on the Caregiver Law, visit this website: www.dhfs.state.wi.us

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Aptitudes required for work of this nature are good physical stamina, endurance, and body condition that would not be adversely affected by frequently having to walk, stand, life, carry, and balance at times, in excess of 125 pounds.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of the program will have the potential for employment as a Fire Medic, Fire Fighter, Paramedic, Emergency Room Technician, EKG Monitoring Technician, Advanced Cardiac Life Support Technician,Cardiac Catheter Lab Technician, Fire Apparatus/Equipment Specialist, Industrial Fire Technician, Industrial Safety Technician, Fire Insurance Investigator, Industrial Fire Inspector, or additional careers applicable to healthcare provision and/or fire sciences related occupations.

Note
Completion of 10-503-150, Fire Science Internship, is highly recommended.

Graduates of the Fire Medic associate degree who complete the following courses with a "C" or better, meet the program benchmark scores for the Nursing-Associate Degree program, AND successfully complete the General Studies courses for the Nursing-Associate Degree program may apply to that program for advanced standing:

Curriculum

Students following the study plan below will complete the Fire Medic Associate Degree in the number of semesters shown.

FIRST SEMESTER   **CREDITS**
*10-503-142 Fire Fighting Principles	4
*10-503-153 Hazardous Material Operations	1
*10-503-191 Principles of Emergency Svcs	2
10-801-136 English Composition 1	3
10-809-172 Intro to Diversity Studies	3
10-809-199 Psychology Of Human Relations	3
**10-890-101 College 101	1
SEMESTER TOTAL	17

SECOND SEMESTER
*10-503-155 Fire Protection Hydraulics	4
10-801-196 Oral/Interpersonal Comm	3
10-804-107 College Mathematics	3
10-809-166 Intro to Ethics: Theory & App	3
10-809-196 Intro to Sociology	3
TOTAL CREDITS	16

THIRD SEMESTER
*10-531-911 EMS Fundamentals	2
*10-531-912 Paramedic Medical Principles	4
*10-531-913 Adv. Patient Asses. Principles	3
*10-531-914 Adv.†Pre-Hospital Pharmacology	3
*10-531-915 Paramedic Respiratory Mgt.	2
*10-531-916 Paramedic Cardiology	4
*10-531-917 Paramedic Clinical/Field 1	3
*10-531-918 Adv. Emergency Resuscitation	1
SEMESTER TOTAL	22

FOURTH SEMESTER
*10-531-919 Paramedic Medical Emergencies	4
*10-531-920 Paramedic Trauma	3
*10-531-921 Special Patient Populations	3
*10-531-922 EMS Operations	1
*10-531-923 Paramedic Capstone	1
*10-531-924 Paramedic Clinical/Field 2	4
SEMESTER TOTAL	16
TOTAL PROGRAM CREDITS	71

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable in any of the core program courses. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

**The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed/certified only after successful completion of the Wisconsin state examination and application for a state license.

- 10-543-127, Paramedic to ADN Theory 1, 3 cr.
- 10-543-128, Paramedic to ADN Theory 2, 3 cr.
- 10-543-129, Paramedic to ADN Clinical, 2 cr.
- 10-543-130, Paramedic to ADN Skills, 2 cr.

Refer to the program information for Nursing-Associate Degree on this website for benchmark scores and required General Studies courses.

- The Fire Medic associate degree program ladders to the Paramedic and Fire Science technical diplomas. Graduates of these technical diplomas may qualify for advance standing within the Fire Medic associate degree program in addition to meeting the program benchmark score requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-503-142 FIRE FIGHTING PRINCIPLES ...basic fire behavior, techniques for control structural, related fire emergencies, life safety practices; covers practical evolutions necessary to control and extinguish fires; satisfies all requirements for Firefighter 1 state certification. (Prerequisite: Acceptance to Fire Science or Fire Medic program; Corequisites: 10-503-191, Principles of Emergency Services; 10-503-153, Hazardous Material Operations)

10-503-153 HAZARDOUS MATERIAL OPERATIONS ...prepares the participant to perform the minimum hazardous material incident operations associated with firefighting functions. Meets operational level competencies referenced in the JPRs in NFPA 1001, 4-1.1. (Corequisites: 10-503-142, Fire Fighting Principles; 10-503-191, Principles of Emergency Services; OR Firefighter I State Certification)

10-503-155 FIRE PROTECTION HYDRAULICS ...provides a foundation of knowledge in order to understand the principles of the use of water in fire protection. Meets all of the requirements for the Driver Operator-Pumper certification with the State of Wisconsin. (Prerequisites: 10-503-191, Principles of Emergency Services and 10-503-142, Fire Fighting Principles OR Firefighter I State Certification; Corequisite: 10-804-107, College Mathematics)

10-503-191 PRINCIPLES OF EMERGENCY SERVICES ...provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; and fire service nomenclature. (Corequisites: 10-503-142, Fire Fighting Principles and 10-503-153, Hazardous Material Operations OR Fire Fighter 1 State Certification)

10-531-911 EMS FUNDAMENTALS ...this course provides the paramedic student with comprehensive knowledge of EMS systems, safety, well-being, legal issues, and ethical issues, with the intended outcome of improving the health of EMS personnel, patients, and the community. The students will obtain fundamental knowledge of public health principles and epidemiology as related to public health emergencies, health promotion, and illness/injury prevention. Introducing students to comprehensive anatomical and medical terminology and abbreviations will foster the development of effective written and oral communications with colleagues and other health care professionals. (Prerequisites: Acceptance in the Paramedic or Fire Medic program; completion of Health Assessment; Corequisites: all 10-531-XXX courses in current semester)

10-531-912 PARAMEDIC MEDICAL PRINCIPLES ...this course addresses the complex depth of anatomy, physiology, and pathophysiology of major human systems while also introducing the paramedic students to the topics of shock, immunology, and bleeding. (Corequisites: all 10-531-XXX courses in current semester)

10-531-913 ADVANCED PATIENT ASSESSMENT PRINCIPLES ...this course teaches the paramedic student to integrate scene and patient assessment findings with knowledge of epidemiology and pathophysiology to form a field impression. By utilizing a structured and organized assessment process with knowledge of anatomy, physiology, pathophysiology, life span development, and changes that occur to the human body with time, the students will learn to develop a list of differential diagnoses through clinical reasoning, along with the ability to modify the assessment as necessary to formulate a treatment plan for their patients. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-914 ADVANCED PRE-HOSPITAL PHARMACOLOGY ...this course provides the paramedic student with the comprehensive knowledge of pharmacology required to formulate and administer a pharmacological treatment plan intended to mitigate emergencies and improve the overall health of the patient. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-915 PARAMEDIC RESPIRATORY MANAGEMENT...this course teaches the paramedic student to integrate complex knowledge of anatomy, physiology, and pathophysiology into the assessment to develop and implement a treatment plan with the goal of assuring a patient airway, adequate mechanical ventilation, and respiration for patients of all ages. Specific knowledge pertaining to the respiratory system is also provided to ensure the student is prepared to formulate a field impression and implement a comprehensive treatment plan for a patient with a respiratory complaint. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-916 PARAMEDIC CARDIOLOGY ...this course teaches the paramedic student to integrate assessment findings with principles of cardiovascular anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a cardiovascular complaint. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-917 PARAMEDIC CLINICAL/FIELD 1 ...this course provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of instructors or approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-917 ADVANCED EMERGENCY RESUSCITATION ...by teaching Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS) methodologies and protocols, this course prepares the paramedic student in the integration of comprehensive knowledge of causes and pathophysiology into the management of shock, respiratory failure, respiratory arrest, cardiac arrest, and peri-arrest states with an emphasis on early intervention to prevent respiratory and/or cardiac arrest if possible. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-919 PARAMEDIC MEDICAL EMERGENCIES ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a medical complaint. (Prerequisites: completion of prior semester coursework; Corequisites: all 10-531-XXX courses in current semester)

10-531-919 PARAMEDIC TRAUMA ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for an acutely injured patient. (Corequisites: all 10-531-XXX courses in current semester)

10-531-921 SPECIAL PATIENT POPULATIONS ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for patients with special needs. Gynecological emergencies, along with special considerations in trauma are also included within this course. (Corequisites: all 10-531-XXX courses in current semester)

10-531-922 EMS OPERATIONS ...this course provides the paramedic student with the knowledge of operational roles and responsibilities to ensure patient, public, and EMS personnel safety. (Corequisites: all 10-531-XXX courses in current semester)

10-531-923 PARAMEDIC CAPSTONE ...this course provides students with a final opportunity to incorporate their cognitive knowledge and psychomotor skills through labs and scenario-based practice and evaluations prior to taking the National Registry written and practical examinations. Technical skills attainment (TSA) for each student will be compiled and/or documented within this course as required by the DHS-approved paramedic curriculum. (Corequisites: all 10-531-XXX courses in current semester)

10-531-924 PARAMEDIC CLINICAL/FIELD 2 ...this course provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of instructors or approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. Successful completion of this course requires the student to meet all clinical and field competency requirements at the paramedic level as defined by WI DHS EMS. (Corequisites: all 10-531-XXX courses in current semester)

Fire Protection Engineering Technology
Program Code 105033 | Associate Degree

Offered at the Marinette campus.
For information: (715) 735-9361.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Fire Protection Engineering Technology
teaches students to design, install, and
service automatic sprinkler, fire alarm, and
special hazard fire suppression systems.

Program Outcomes

- Analyze developments in the
  fire protection field.
- Create fire protection system drawings.
- Create written, technical,
  and oral presentations.
- Design fire alarm systems.
- Interpret construction blueprints.
- Evaluate automatic sprinkler systems.
- Classify fire protection hazards.
- Troubleshoot electrical components
  of fire protection systems.
- Determine the most appropriate
  fire extinguishing method.
- Utilize project management techniques.
- Design automatic fire sprinkler systems.
- Test to NICET Level II in
  at least one subfield.
- Design special hazard fire
  suppression systems.
- Critique historical and current
  fire incident case studies.
- Estimate fire protection systems costs.
- Install, service, and inspect
  fire protection systems.
- Apply local, state and national
  codes and standards.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent.
  (For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math
  skills. For a description of basic math, see
  the Basic Education section of this catalog.
- High school background in mathematics,
  science, and technology education.
- As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program Benchmarks are:
  Arithmetic: 65; Reading Comprehension:
  55; Sentence Skills: 75. Students not

meeting these benchmarks or the
equivalent will be required to establish an
individualized academic plan. Students
may have the opportunity to enroll in
selected program core courses while
completing their individualized plan.
Upon completion of the plan students
will be eligible for all program courses.
However, higher test scores will lead
to greater success in core program
courses. To learn more about these
assessments and program benchmark
scores, please contact a counselor
(920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will
have the potential for employment
in the following areas:

Fire Protection Systems Designer:
prepares designs and layout drawings
of new detection and suppression
systems for commercial, residential,
and industrial applications.

Fire Protection Equipment Sales
Representative: merchandises
fixed and portable fire protection
equipment for commercial, industrial,
and residential applications.

Fire Protection Systems Installer:
interprets the protection system design
for on-site installation, operation, and
maintenance of fire protection systems.

Industrial Safety Technician: assists the
industrial safety manager in plant fire
safety programs and procedures; and
ensures compliance with federal, state,
and municipal codes and ordinances.

With additional education and/or work
experience, graduates may find other
opportunities for employment.
- Fire Protection Consultant
- Fire Protection Equipment Sales Manager
- Industrial Safety Manager
- Municipal Safety Manager
- Property Loss/Risk Management Specialist

Note
- Learners interested in double majoring in
  Accounting or Credit Business Management
  should consult with an instructor.
- Refer to the program website for
  information on accelerated learning
  and for helpful tips that will assist you
  in achieving the highest quality and
  most rewarding academic experience.
- Most credits from this degree can
  be transferred to some four-year
  colleges for learners interested in
  pursuing a bachelor's degree.

Curriculum

Students following the study plan
below will complete the Fire Protection
Engineering Technology associate degree
in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-503-104	Fire Protection Fundamentals 1	1
10-503-105	Fire Protection Fundamentals 2	2
10-503-115	Fire Tech Prt Rdg/Sketching	3
10-503-136	Sprinkler Systems 1	2
10-606-115	CAD	3
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
**10-890-101	College 101	1
SEMESTER TOTAL		**18**

SECOND SEMESTER		
10-503-120	Special Hazards Systems 1	3
10-503-126	Sprinkler Hydraulics-Auto	3
10-503-132	Fire Detection-Elec 1	3
10-503-137	Sprinkler Systems 2	4
10-503-180	Nicet-Basic	2
10-606-128	CAD-Fire Tech Advanced	1
***10-801-136	English Composition 1	3
SEMESTER TOTAL		**19**

THIRD SEMESTER		
10-503-128	Fire Alarm System Design	2
10-503-129	Fire Alarm Systems Application	1
10-503-135	Fire Detection-Elec 2	3
10-503-138	Hazard Analysis	3
10-503-149	Sprinkler Systems 3	2
*10-503-1XX	NICET Advanced	1
AND/OR		
*10-503-1XX	NICET Advanced	1
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**16**

FOURTH SEMESTER		
10-503-140	Special Hazards Systems 2	3
10-503-148	Technical Project	3
*10-503-1XX	NICET Advanced	1
OR		
*10-503-1XX	NICET Advanced	1
OR		
*10-503-1XX	NICET Advanced	1
OR		
*10-503-1XX	NICET Advanced	1
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		**16**
TOTAL CREDITS		**69**

CURRICULUM NOTE
*Any three of the six NICET Advanced courses
must be taken prior to graduation.
- 10-503-185 NICET Advanced Sprinklers
  1, 1 credit – offered third semester
- 10-503-187 NICET Advanced Special Haz
  1, 1 credit – offered third semester
- 10-503-186 NICET Advanced Sprinklers
  2, 1 credit – offered fourth semester
- 10-503-188 NICET Advanced Special Haz
  2, 1 credit – offered fourth semester
- 10-503-189 NICET Advanced Alarms 1,
  1 credit – offered fourth semester
- 10-503-190 NICET Advanced Alarms 2,
  1 credit – offered fourth semester

**The credit for 10-890-101, College
101 is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

***Students must earn a grade of "C" or
better in 10-801-136, English Composition to
enroll in 10-801-197, Technical Reporting.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-503-104 FIRE PROTECTION
FUNDAMENTALS 1 ...fire protection
overview, fire science, fire extinguishers,
extinguishing agents, fire sprinkler
systems, fire alarm systems, explosion
suppression, fire codes and standards.

10-503-105 FIRE PROTECTION
FUNDAMENTALS 2 ...combustion
processes, fire detection technology, fire
suppression technology, historical fires, fire
codes, building codes, contracts, liability, fire
protection industry and career opportunities.

10-503-115 FIRE PROTECTION
BLUEPRINT READING/SKETCHING
...reading floor plans, details, site plans,
electrical, HVAC, plumbing and fire
protection plans, performing and sketching
site surveys for fire protection, preparing bill
of materials, and interpreting specifications.

10-503-120 SPECIAL HAZARDS
SYSTEMS 1 ...carbon dioxide systems, the
phase out of Halon systems, clean agents,
halocarbon systems, inert gas systems, dry
chemical systems, wet chemical systems, foam
systems, and explosion suppression systems.

10-503-126 SPRINKLER HYDRAULICS-
AUTOMATIC ...hydraulic calculations for
tree, loop, and grid systems using manual
and computerized methods; and testing and
evaluating water supplies for fire protection.

10-503-128 FIRE ALARM SYSTEM
DESIGN ...the operating principles, selection
and application of automatic fire detectors;
proper location and spacing of detectors; the
selection and use of notification appliances;
and various types of fire alarm systems.

10-503-129 FIRE ALARM SYSTEMS
APPLICATIONS ...the interconnection
of automatic fire detectors, notification
appliances and fire alarm panels;
addressability of devices; programming
of addressable fire alarm panels; and
troubleshooting of addressable panels.

10-503-132 FIRE DETECTION-
ELECTRONICS 1 ...basic concepts of
AC/DC electrical circuits, Ohm's Law,
series/parallel resistance, conductors,
insulators, batteries, and electro-mechanical
induction used in fire protection.

10-503-135 FIRE DETECTION-
ELECTRONICS 2 ...electronic sensing and
activating systems, detection, alarm and
suppression systems, component parts, power
sources, and testing and troubleshooting
fire protection systems. (Prerequisite:
10-503-132, Fire Detection- Elec 1)

10-503-136 SPRINKLER SYSTEMS
1 ...automatic fire sprinkler systems
emphasizing types of sprinkler systems and
their application, hazard classifications,
automatic fire sprinkler system components,
and sprinkler system design approaches.

10-503-137 SPRINKLER SYSTEMS
2 ...fire protection requirements of
automatic sprinkler systems, design pipe
schedule and hydraulically calculated
water suppression systems, foam systems,
and fire pump selection. (Prerequisite:
10-503-136, Sprinkler Systems 1)

10-503-138 HAZARD ANALYSIS
...planning, surveying, and making
professional recommendations regarding
appropriate fire prevention, and
suppression and detection systems for
specified industrial fire hazards.

10-503-140 SPECIAL HAZARDS
SYSTEMS 2 ...the design of special hazard
systems emphasizing total flooding and local
application CO2 systems, inert gas and
halocarbon clean agent systems. (Prerequisite:
10-503-120, Special Hazards Systems 1)

10-503-148 TECHNICAL PROJECT
...independent research report
or project utilizing technical and
communication skills from Fire Protection
Engineering Technician program.

10-503-149 SPRINKLER SYSTEMS 3 ...
high piled storage, rack storage, extended
coverage, residential, and water spray
sprinkler system design utilizing computer
design software; specifying supplemental
water supplies for fire protection.

10-503-180 NICET-BASIC ...procedures,
forms, standards, codes, and general
knowledge necessary to successfully pass the
crossover work elements in level 2 - NICET
Certification in Auto Sprinkler, Special
Hazard, and Fire Alarm Systems Layouts.

10-503-185 NICET ADVANCED
SPRINKLERS 1 ...certification
preparation for Level I and Level II
NICET work elements in the subfield of
Automatic Sprinkler System Layout.

10-503-186 NICET Advanced Sprinklers
2 ...certification preparation for Level
III and Level IV NICET work elements
in the subfield of Automatic Sprinkler
System Layout. (Prerequisite: 10-503-
185, NICET Advanced Sprinklers 1)

10-503-187 NICET ADVANCED SPECIAL
HAZARDS 1 ...certification prepared for
Level I and Level II NICET work elements
in the subfield of Special Hazards Systems.

10-503-188 NICET ADVANCED
SPECIAL HAZARDS 2 ...certification
preparation for Level III and Level IV
NICET work elements in the subfield of
Special Hazards Systems. (Prerequisite: 10-
503-187, NICET Advanced Spec Haz 1)

10-503-189 NICET ADVANCED
ALARMS 1 ...certification preparation
for Level I and Level II NICET work
elements in the subfield of Fire Alarms.

10-503-190 NICET ADVANCED
ALARMS 2 ...certification preparation for
Level III and Level IV NICET work elements
in the subfield of Fire Alarms. (Prerequisite:
10-503-189 NICET Advanced Alarms 1)

10-606-115 CAD (COMPUTER AIDED
DRAFTING) ...entry level computer-aided
graphics with AutoCAD software; using
basic and advanced drawing, display, editing,
dimensioning, and plotting commands.

10-606-128 CAD-FIRE TECH
ADVANCED ...advanced definition and
use of: blocks, user coordinate systems,
external references, attributes, and layouts for
drawing and plotting; and drawing exchange
procedures. (Prerequisite: 10-606-115, CAD)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Fire Science program trains basic fire behaviors, techniques used to control structural and related fire emergencies and life safety practices. This program will provide an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service, fire loss analysis; organization and function of public and private fire protection/services; fire departments as a part of local government; laws and regulations affecting the fire service; and fire service nomenclature.

Program Outcomes

- Prepare for incident response and Fire operations.

- Demonstrate fire protection skills associated with established standards and procedures for a variety of emergency based encounters.

- Communicate clearly and effectively both verbally and through written documentation with clients, coworkers, other agencies, and supervisors.

- Demonstrate professional behavior.

- Meet Wisconsin state and national competency requirements for fire credentialing.

- Demonstrate professional conduct by displaying personal code of ethics, positive work ethics, flexibility, teamwork skills, physical fitness, safe procedures, and sensitivity to diverse cultures and individuals.

- Perform fire prevention activities including preplanning, public education, inspection, and investigation.

- Apply incident management and mitigation skills to emergency incidents.

- Apply critical thinking skills to both emergency and non-emergency situations.

Requirements for Program Entry

- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

- Aptitudes required for work of this nature are good physical stamina, endurance, and body condition that would not be adversely affected by frequently having to walk, stand, life, carry, and balance at times, in excess of 125 pounds.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Curriculum

Students following the study plan below will complete the Fire Science Technical Diploma in the number of semesters shown.

FIRST SEMESTER	CREDITS
*10-503-142 Fire Fighting Principles	4
*10-503-153 Hazardous Material Operations	1
*10-503-191 Principles of Emergency Svcs	2
**10-890-101 College 101	1
SEMESTER TOTAL	8

SECOND SEMESTER	
*10-503-155 Fire Protection Hydraulics	4
10-804-107 College Mathematics	3
SEMESTER TOTAL	7
TOTAL CREDITS	15

CURRICULUM NOTE

*No final grade lower than a ìCî is acceptable in any of the core program courses. A student who withdraws or receives a grade lower than a ìCî in a program course may apply for re-entry into the program.

**The credit for 10-890-01, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

Successful program completion prepares and entitles the student to take the state certification examination. A graduate is licensed only after successful completion of the certification examination and application for a state certification.

Graduates of the Fire Science technical diploma who complete their coursework with a "C" or better in their program courses and meet the program benchmark scores for the Fire Medic program, may qualify for advanced standing within the Fire Medic Associate Degree program.

Employment Potential

A graduate of the program will have the potential for employment as a Fire Fighter, Fire Apparatus/Equipment Specialist, Industrial Fire Technician, Industrial Safety Technician, Fire Insurance Investigator, Industrial Fire Inspector, or additional careers applicable to fire sciences related occupations.

Note
Additional courses which may enhance your eligibility for employment:
- 10-503-150, Fire Science Internship
- 10-531-102, EMT

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-503-142 FIRE FIGHTING PRINCIPLES ...basic fire behavior, techniques for control structural, related fire emergencies, life safety practices; covers practical evolutions necessary to control and extinguish fires; satisfies all requirements for Firefighter 1 state certification. (Prerequisite: Acceptance to Fire Science or Fire Medic program; Corequisites: 10-503-191, Principles of Emergency Services; 10-503-153, Hazardous Material Operations)

10-503-153 HAZARDOUS MATERIAL OPERATIONS ...prepares the participant to perform the minimum hazardous material incident operations associated with firefighting functions. Meets operational level competencies referenced in the JPRs in NFPA 1001, 4-1.1. (Corequisites: 10-503-142, Fire Fighting Principles; 10-503-191, Principles of Emergency Services; OR Firefighter I State Certification)

10-503-155 FIRE PROTECTION HYDRAULICS ...provides a foundation of knowledge in order to understand the principles of the use of water in fire protection. Meets all of the requirements for the Driver Operator-Pumper certification with the State of Wisconsin. (Prerequisites: 10-503-191, Principles of Emergency Services and 10-503-142, Fire Fighting Principles OR Firefighter I State Certification; Corequisite: 10-804-107, College Mathematics)

10-503-191 PRINCIPLES OF EMERGENCY SERVICES ...provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; and fire service nomenclature. (Corequisites: 10-503-142, Fire Fighting Principles and 10-503-153, Hazardous Material Operations OR Fire Fighter 1 State Certification)

Gas Utility Construction and Service

Program Code 314692 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Gas Utility Construction and Service prepares students to install, maintain, and operate natural and propane gas distribution systems used to supply residential, commercial, and industrial customers.

Program Outcomes

- Communicate technical information.
- Operate tools and equipment.
- Join pipe.
- Install propane gas distribution systems.
- Install natural gas distribution systems.
- Apply customer service skills.
- Maintain gas distribution systems.
- Operate pipeline excavation equipment.
- Service gas appliances.
- Opportunity to secure a commercial driver's license (CDL).

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Be able to obtain a commercial driver's license.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 60. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan, full program status will be granted. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Propane Gas Delivery Person: delivers bulk propane gas to customers and interacts with customers.

New Customer Tank and Cylinder Installer: installs propane and connects piping to customer appliances.

Bulk Plant Operator: fills and maintains cylinders and fills bulk delivery trucks.

Gas Construction Mechanic: installs and maintains gas distribution and transmission pipelines using trenching, backhoe, underground road boring, plastic fusion, welding, mapping, and record keeping skills.

Gas Meter Mechanic: installs, repairs, and maintains electronic and mechanical gas metering equipment.

Gas Service Mechanic: installs and maintains residential, commercial, and industrial gas piping, valving, pressure regulating, and overpressure protective equipment.

Gas Clerk-Estimator: develops specifications and related maps and records used in installing and maintaining gas distribution facilities. Records of this type are manual but are moving towards computer emphasis.

Gas Regulator Maintenance Mechanic: installs and maintains high pressure gas regulating, measuring, odorizing, heating, filtering, valving, and piping systems; electronically and mechanically operated equipment are involved.

Gas Appliance Repair Mechanic: maintains and troubleshoots residential and/or commercial gas appliances and heating/cooling equipment.

Underground Facilities Locator: locates and marks all underground facilities prior to excavation using various locating equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.

Curriculum

Students following the study plan below will complete the Gas Utility Construction and Service technical diploma in the number of semesters shown.

FIRST SEMESTER

		CREDITS
*10-890-101	College 101	1
31-442-315	Welding-Gas Service 1	2
31-469-311	Gas Utility Field Trng 1	5
31-804-312	Math-Algebra/Trades	1
SEMESTER TOTAL		9

SECOND SEMESTER

31-413-348	Electricity-Basic	2
31-422-310	Metallurgy	2
31-442-325	Welding-Gas Service 2	2
31-469-320	Gas Utility Field Trng 2	5
31-469-331	Gas Utility Field Trng 3	4
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		16

THIRD SEMESTER

31-413-358	Electricity-Gas Applianc	2
31-469-340	Gas Utility Field Trng 4	4
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		7
TOTAL CREDITS		32

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

- Construction Crew Foreman
- Corrosion Technician
- Meter and Regulator Technician
- Utility Locating Supervisor
- Pipeline Welder
- Vendor Sales and Marketing

Note

- Students receive a certificate from the Midwest Energy Association. This certificate is recognized throughout the United States.
- Students also receive selected Pipeline Operator qualifications as mandated by the Federal Office of Pipeline Safety.
- Students who have completed the Gas Utility Construction and Service technical diploma program have the opportunity to fulfill the requirements for a Utility Management certificate and/or apply these credits toward a Leadership Development and/or an Individualized Technical Studies associate's degree.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-413-348 ELECTRICITY-BASIC ...electron theory, electrical terms, Ohm's Law, DC and AC circuits, magnetism and magnetic devices, electrical measurements, inductance and capacitance, relays and transformers, motors and generators, circuit protective devices, electrical safety. (Prerequisite: Accepted into Gas Utility Construction & Service.)

31-413-358 ELECTRICITY-GAS APPLIANCE ...electrical sources/circuits in gas appliances, safe practices, test equipment, reading wiring diagrams, gas/electrical control functions, ignition systems, sequence of operation and troubleshooting. (Prerequisite: 31-413-348, Electricity Basic)

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-315 WELDING-GAS SERVICE 1 ...position pipe welding utilizing oxyacetylene and gas metal arc welding, welding safety, weld faults and causes, weld joint design, and fitup. (Prerequisite: Accepted into Gas Utility Construction & Service; Corequisite: 10-804-312, Math-Algebra Trades)

31-442-325 WELDING-GAS SERVICE 2 ...position pipe welding utilizing gas metal arc welding and shielded metal arc welding processes, pipe fitup, and pipe weld testing according to API 1104 code. (Prerequisite: 31-442-315, Welding-Gas Service 1)

31-469-311 GAS UTILITY FIELD TRAINING 1 ...construction equipment safety and operation (trenching, backhoe, boring), equipment maintenance, gas and vehicular safety, field mapping. (Prerequisite: Accepted into Gas Utility Construction & Service)

31-469-320 GAS UTILITY FIELD TRAINING 2 ...natural gas line installation standards for plastic pressure testing, fusion, leak detection procedures, general installation procedures and repair of plastic mains and services, introduction to propane gas systems and safety. (Prerequisite: 31-469-311, Gas Utility Field Training 1)

31-469-331 GAS UTILITY FIELD TRAINING 3 ...installation and repair of steel mains and services, applied field welding and maintenance, line testing and leak detection procedures, approved safety installation procedures using hand tools and supportive equipment. (Prerequisite: 31-469-320, Gas Utility Field Training 2)

31-469-340 GAS UTILITY FIELD TRAINING 4 ...installation, maintenance, and repair of residential gas appliances, venting codes, line stoppering equipment, corrosion control, regulators, metering, first aid, and customer service training. (Prerequisite: 31-469-331, Gas Utility Field Training 3)

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Gerontology program will prepare learners with the theoretical knowledge and practical experience necessary to enter the job market or enhance their existing careers in service delivery roles as well as leadership roles in the gerontology field. Graduates of this program will possess an understanding of the multidisciplinary nature of gerontology, which includes psychological, sociological and physiological changes that occur during late adulthood.

Program Outcomes

- Provide recommendations for successful aging and optimal quality of life.
- Evaluate physical, social, psychological and spiritual aspects of aging.
- Identify and refer older adults to needed services.
- Exhibit behaviors and conduct that reflect safe, legal, and ethical gerontological practices.
- Evaluate and advocate in the area of aging public policy.
- Exhibit professional communication.
- Develop ethical and cultural awareness related to aging.
- Plan, develop, implement and deliver appropriate activities to meet physical, social, psychological needs of the aging population.
- Create a personal professional development plan.
- Investigate and incorporate evidence-based gerontology practices into delivery of services.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer Benchmarks are Arithmetic, 65; Reading Comprehension, 78: Sentence Skills, 75. ACT benchmarks are Math 15, Reading 15, English 16. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

- Attend a mandatory spring program orientation.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

Direct Service Provider: Works "one-on-one" with older persons and their families to assess needs, knowledge of resources and delivery of services.

Program Planner and Evaluator: Surveys the community to gauge the interests and needs of older persons, designing programs to meet these needs, and evaluating the programs' effectiveness.

Manager/Administrator: Supervises and directs the daily operation of facilities, agencies, or programs that serve the aging population.

Marketing and Product Development Professional: Targets unmet product and service needs of older persons. Develops and implements solutions to enhance productivity and independence. Educates and refers the aging population to creative technologies that may allow them to "age in place."

Advocate: Fosters policies and programs to benefit the aging based on knowledge of unmet needs and the ability to communicate in public and private forums.

Educator/Trainer: Develops and delivers educational programming responsive to the needs of older persons or those who serve them, including informal caregivers.

Researcher: Studies the aging process and investigates the effectiveness of intervention programs and policies.

Environmental Designer: Designs safe living environments for the elderly population.

Financial Management/Legal Support Service Provider: Serves as primary contact person for management of financial and legal issues for aging clients and their families.

Internship

- Students will be required to pay for

liability insurance, provide their own transportation to internship sites, and cover any other expenses related to internship experiences. Students may be expected to travel distances to internships.
- Dependent on the site, students may be required to complete a 2-step TB test and CPR certification prior to their internship. Students may be required by the internship site to complete a pre-clinical/internship health records form and/or provide proof of immunizations prior to interning.
- Students will be required to show proof of an annual flu vaccine.

Flexible Learning Option

The entire Gerontology program is offered online WITH THE EXCEPTION of the internship in 4th semester.

The program may be completed in a part-time or full-time format.

Curriculum

Students following the study plan below will complete the Gerontology associate degree program in the number of semesters shown.

FIRST SEMESTER

Code	Title	CREDITS
10-103-121	Micro: Word-Intro	1
*10-544-201	GERO: Intro to Gerontology	3
*10-544-202	GERO:Physical Aspects of Aging	3
10-801-136	English Composition 1	3
10-809-103	Think Critically & Creatively	3
10-809-198	Intro to Psychology	3
**10-890-101	College 101	1
SEMESTER TOTAL		**17**

SECOND SEMESTER

Code	Title	CREDITS
*10-544-203	GERO: Healthy Aging	3
*10-544-204	GERO: Social Gerontology	3
*10-544-205	GERO: Alzheimer's & Dementia	2
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
10-809-188	Developmental Psychology	3
SEMESTER TOTAL		**17**

THIRD SEMESTER

Code	Title	CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-104-191	Customer Service	3
*10-544-206	GERO: Death and Dying	3
*10-544-207	GERO: Legal & Ethical Issues Ag	3
*10-544-210	GERO: Generations & Diversity	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**18**

FOURTH SEMESTER

Code	Title	CREDITS
10-104-110	Marketing Principles	3
10-196-191	Supervision	3
*10-544-208	GERO:Developing Gerontology	3
*10-544-209	GERO:Programs & Services Aging	3
*10-544-212	GERO: Gerontology Internship	4
SEMESTER TOTAL		**16**
TOTAL CREDITS		**68**

CURRICULUM NOTE

*No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-544-201 GERO: INTRO TO GERONTOLOGY ...a general overview of the field of aging. Topics include demographic, biological, psychological, and social aspects of the aging process.

10-544-202 GERO: PHYSICAL ASPECTS OF AGING ...study of normal and pathological changes occurring in the aging human body with special emphasis on age-related chronic diseases. Topics addressed include: analysis of biological theories of aging, cultural and ethnic influence on aging pathologies, and other factors impacting the aging process. (Corequisites: 10-544-201, Intro to Gerontology; 10-801-136, English Composition 1)

10-544-203 GERO: HEALTHY AGING ...overview of practices to promote healthy aging. This course will address nutrition, physical activity and prevention practices as well as an overview of medications commonly prescribed for the older adult. Emphasis will focus around the "well" elderly population and practices identified to address current aging trends.

10-544-204 GERO: SOCIAL GERONTOLOGY ...view of aging in respect to social roles and processes. Topics include history of aging, demographics, family relationships, social supports, economics, retirement, widowhood, poverty and politics of aging. (Prerequisites: 10-544-201, Intro to Gerontology; 10-801-136, English Composition 1)

10-544-205 GERO: ALZHEIMER'S AND DEMENTIA DISEASE ...study of Alzheimer's disease and other forms of dementia. Students will differentiate between stages of dementia and Alzheimer's disease. By analyzing normal brain processes and how these diseases affect brain function, students gain insight on best practices in responding to the needs of this population and their caregivers and loved ones.

10-544-206 GERO: DEATH AND DYING ...study of losses across the lifespan associated with death and dying. Societal and personal views of death, dying, and bereavement and recommendations for healthy transitions in coping with loss will be explored.

10-544-207 GERO: LEGAL & ETHICAL ISSUES OF AGING ...covers concepts and structures involved in the legal and ethical realm of gerontology including Power of Attorney for health care/finance, guardianships, trusts, reallocation of assets, spending down, Medicare/Medicaid benefits, supplemental insurance, Social Security, elder abuse/neglect, financial exploitation, reporting abuse/neglect and relevant governmental policy. Learners will be able to apply knowledge by learning advocacy techniques to benefit senior populations on a community, local, and federal level. (Co/Prerequisites: 10-544-201, Intro to Gerontology; 10-544-204, Social Gerontology)

10-544-208 GERO: DEVELOPING THE GERONTOLOGY PROFESSIONAL ...exploration of effective communication styles and interview techniques for developing rapport and relationships with aging populations. Other topics include ethics and boundaries, self-determination, case plan development and implementation, documentation skills, research and grant funding, and compassion fatigue. (Prerequisites: Prerequisites: 10-544-201, GERO: Intro to Gerontology; 10-544-202, GERO: Physical Aspects of Aging; 10-544-203, GERO: Healthy Aging; 10-544-204, GERO: Social Gerontology; 10-544-205, GERO: Alzheimer's and Dementia Disease; 10-544-206, GERO: Death and Dying; 10-544-207, GERO: Legal & Ethical Issues Aging; 10-544-210, GERO: Generations and Diversity in Aging)

10-544-209 GERO: PROGRAMS AND SERVICES IN AGING ...an overview of social policy as it relates to aging and available federal funding for the senior consumer. Students will learn the resources available in the community, eligibility criteria, and how to access and coordinate services for seniors. Supplementing social networking and enhancing mental health functioning for the aging population will also be discussed. Students will explore different career fields within gerontology. (Prerequisites: 10-544-206, GERO: Death and Dying, 10-544-207, GERO: Legal and Ethical Issues of Aging, 10-544-210, GERO: Generations & Diversity Aging)

10-543-210 GERO: GENERATIONS AND DIVERSITY IN AGING ...generational study and how experience and history affect the value and societal expectations of each generation. Also covered will be diversity trends among the older adults including but not limited to race, ethnicity, culture, sexual orientation and physical, cognitive and developmental disabilities. Focus on accommodations and accessibility for elderly. (Prerequisites: 10-544-201, Intro to Gerontology; 10-544-204, Social Gerontology)

10-544-212 GERO: GERONTOLOGY INTERNSHIP...students integrate concepts from all previous courses through supervised training in an appropriate setting and actual work experience and observation. Learners will further develop their critical thinking skills through communications and counseling experience, client assessment and case plan development and implementation. Learners will also share experiences and provide feedback online throughout the course. (Prerequisites: 10-544-206, Death and Dying; 10-544-207, Legal and Ethical Issues of Aging; Corequisites:10-543-209, Programs and Services in Aging; 10-543-210, Generations and Diversity in Aging).

A Waukesha County Technical College program is offered at Northeast Wisconsin Technical College. For information call Toll-free: (877) 463-9282.

This program is eligible for financial aid ONLY through Waukesha County Technical College.

Program Description

Global Business Specialist graduates are prepared to help their employers navigate in a global economy. Importing and exporting products and services is a key job responsibility along with coordinating global marketing, finance and logistics. Identifying regulations and understanding documents that facilitate the global supply chain are other duties you will perform. To prepare for this career, you can take advantage of WCTC's award-winning Global Trade Solutions seminars, workshops and other global business community services.

- Work toward your degree in stages by completing certificates in Export, Import, Global Business Management, International Marketing and Global Business.
- Prepare to take the NASBITE Certified Professional TM (NASBITE CGBP TM) credential exam.
- Evening completion options available.

Program Outcomes

- Demonstrate the ability to complete an export trade.
- Utilize terms of sale to minimize the risk involoved in global trade.
- Analyze potential markets in order to develop an appropriate target market entry plan.
- Utilize letters of credit to minimize the risk involved in global trade.

- Demonstrate awareness of the effect of currency fluctuation as it relates to international transactions.
- Demonstrate the ability to function effectively as a member of a team.
- Communicate effectively with co-workers and international customers both verbally and in writing.
- Demonstrate awareness of the influence of cultures and languages involved in global trade.
- Demonstrate basic math and computer skills in order to function effectively in global business.

Requirements for Program Entry

- Global Business is a collaborative program between WCTC and NWTC. Application for this program must be completed through WCTC.

Employment Potential

Wages of Recent Graduates:
- Average Salary: $42, 000
- Average Hourly Wage: $20.21
- Three-year average: $38, 814

Selected Job Titles of Recent Graduates:
- Account Executive, Exports, Others from DACUM?

About Shared Programs

- Courses will be offered online (NET) from WCTC.
- Contact WCTC for all benchmark scores.
- This program is fully eligible for Financial Aid only through Waukesha County Technical College.

Curriculum

The Global Business Associate Degree is a two-year, four semester collaborative program between Waukesha County Technical College and Northeast Wisconsin Technical College. Upon completion, students will have completed 69 credits.

FIRST SEMESTER		CREDITS
10-102-185	Contemporary Business	3
10-104-102	Marketing Principles	3
10-106-110	Microcomputer Business Apps 1	3
10-138-150	Global Business Fundamentals	3
10-801-195	Written Communication	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		18

SECOND SEMESTER | |
---|---|---
10-101-104 | Accounting Fundamentals | 3
10-104-190 | Customer Service Management | 3
10-138-155 | Global Marketing | 3
10-138-165 | Global Supply Chain Logistics | 3
10-809-172 | Intro to Diversity Studies | 3
10-809-195 | Economics | 3
SEMESTER TOTAL | | 18

THIRD SEMESTER | |
---|---|---
10-102-149 | Business Law 1 | 3
10-138-166 | Glbal Supp Chn Sourcng & Proc | 3
10-138-181 | Global Trade Finance | 3
10-801-197 | Technical Reporting | 3
10-809-115 | Global Cultural Awareness | 3
10-809-199 | Psychology Of Human Relations | 3
SEMESTER TOTAL | | 18

FOURTH SEMESTER | |
---|---|---
10-138-185 | Global Business Applications | 3
10-138-186 | Certified Global Business Prof | 1
10-138-194 | Import Compliance | 2
10-138-195 | Export Compliance | 2
10-140-101 | Global Cultural Experience | 1
OR | |
10-140-120 | Study Abroad | 1
10-801-196 | Oral/Interpersonal Comm | 3
10-809-116 | Global Cultural Awareness II | 3
SEMESTER TOTAL | | 15
TOTAL CREDITS | | 69

CURRICULUM NOTE

General Studies courses (10-8XX-XXX) may be taken at NWTC if students meet NWTC benchmark scores. Written Communication, 10-801-195, is available only from WCTC.

NWTC's Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 75 for courses that begin with 10-8XX-XXX.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-105 ACCOUNTING FUNDAMENTALS ...use a survey approach to learn the accounting process and to gain a general knowledge of the accounting principles and financial accounting procedures applied to business budgeting. This course is for non-accountants.

10-102-160 BUSINESS LAW 1 ...examine the legal and ethical environments of business, including positive law, criminal and tort law, contracts, sales law, business formation, government regulation, agency, bailment, property, ethics, and social responsibility.

10-102-100 CONTEMPORARY BUSINESS ...develop a basic understanding of the principles and terminology used in the business world, and gain insight into the fields of marketing, business management, data processing, and accounting.

10-104-102 MARKETING PRINCIPLES ...explore marketing principles as found in the American business system, with an emphasis on consumer behavior, consumer and industrial products, distribution, market research, market segmentation, promotion, pricing, and international marketing.

10-104-191 CUSTOMER SERVICE MANAGEMENT ...explore the skills, attitudes, and thinking patterns required to manage customer satisfaction and loyalty. Develop the ability to lead and expand the customer service process, learn techniques for dealing with unhappy customers, and build skills for analyzing customer needs.

10-106-110 MICROCOMPUTER BUSINESS APPS 1 ...an overview of Microsoft Office software and its five major applications: Microsoft Word, Excel, Access, PowerPoint and Outlook. Also gain an understanding of the Windows operating system and Internet Explorer.

10-138-150 GLOBAL BUSINESS FUNDAMENTALS ...review the fundamentals of global business in an effort to understand how the environment, world history, and political systems impact the global trade arena. Discuss trading blocks, including NAFTA, Mercosor, the EC and the WTO, in the context of the global economy.

10-138-155 GLOBAL MARKETING ...analyze how commodities and industrial products are globally marketed, focusing on the concepts of distribution channels, trade patterns, competition, product planning and life cycle, advertising and promotion and market research.

10-138-165 GLOBAL SUPPLY CHAIN LOGISTICS ...develop an in-depth understanding of the flow of documents, ISO, and compliance issues in relationship to U.S. export control laws. Learn the basics of ocean/air rate calculations. Discuss trade treaties such as NAFTA and their impact on documents and transportation.

10-138-166 GLOBAL SUPPLY CHAIN SOURCING AND PROCUREMENT ...explore the process of identifying, qualifying and negotiating the purchase of goods and services from global sources of supply. Learners will examine the combination of cultural, logistical and financial factors encountered when purchasing offshore. Course competencies include an understanding of Incoterms, the harmonized system, import procedures, methods of payment, and conflict resolution. Course competencies align with the CGBP domain #3 and selected task skills from domain #1.

10-138-180 GLOBAL TRADE FINANCE ...examine the intricacy of the foreign market and hedging against fluctuations. Explore the global capital market, the development of the Euro, and major types of risk in export financing.

10-138-185 GLOBAL BUSINESS APPLICATIONS ...draw on the skills learned in past coursework while completing a project that incorporates international market research, international organization and planning skills, international correspondence and documentation, price calculations, and international transportation.

10-138-186 CERTIFIED GLOBAL BUSINESS PROFESSIONAL (CGBP) REVIEW ...prepare for the national NASBITE CGBP certification exam in this course. Learners will review the four domains and key duties, tasks, and knowledge statements associated with the CGBP exam and answer mock certification exam questions developed by the instructor to help prepare for testing. The course also explores test-taking strategies, how to study for the exam, and where and how to sign-up. Individuals working in global business related occupations and preparing for the CGBP may benefit from this course.

10-138-194 IMPORT COMPLIANCE ...learners will examine compliance requirements related to importing goods in support of global business operations. Course competencies will include developing import related purchasing documentation, creating other import related documentation, examining import controls and licenses, and exploring import related security. Learners will develop an import compliance program in response to business case studies or scenarios.

10-138-195 EXPORT COMPLIANCE ...learners will examine compliance requirements related to exporting goods in support of global business operations. Course competencies will include developing export related sales documentation, creating other export documentation, examining export controls and licenses, and examining export related security. Learners will develop an export compliance program in response to business case studies or scenarios.

10-140-101 GLOBAL CULTURAL EXPERIENCE ...refer to www.wctc.edu for this course description.

10-140-199 STUDY ABROAD ...provides the opportunity for the learner to develop the knowledge, skills, process and understanding of international study abroad experiences. It applies theories of culture and explores a variety of concepts associated with international travel and interacting with people of other cultures.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Health Care Business Services prepares a student to work in the business office of medical and dental clinics, hospitals, nursing homes, related healthcare facilities, and health insurance settings in administrative, financial, and customer service roles.

Students who have an interest in the business and information aspects of healthcare, but are unsure of their preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes

- Follow federal, state, and local laws and regulations.
- Identify marketing methods and benefits for health care facilities.
- Use service and managed care contracts.
- Process patient accounts receivables.
- Schedule patient appointments.
- Use medical terminology.
- Use ICD and CPT/HCPCS coding.
- Complete and process health insurance claim forms.
- Process medical records release and storage procedures.
- Identify components of the U.S. healthcare delivery system.
- Apply computer skills specific to health care and health insurance.
- Record accounting and financial transactions in a medical setting.
- Use a computer keyboard.
- Investigate effective telephone techniques.
- Explore components of the employment interview.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment as:

- Admitting Representative
- Appointment Scheduler
- Claims Analyst
- Insurance Billing Specialist
- Medical Records Associate
- Patient Services Representative
- Patient Accounts Associate
- Provider Relations Associate
- Financial Counselor
- Medical and Insurance Customer Service Representative

With additional education and/or work experience, graduates may find other opportunities for employment.

- Clinic Office Supervisor or Manager
- Hospital Administrative Assistant
- Medical Credit Manager
- Nursing Home Administrator
- Nursing Home Administrative Assistant
- Patient Accounts Supervisor
- Health Insurance Supervisor/Trainer
- Certified Coding Specialist
- Health Insurance Provider Contract Analyst
- Physician Relations Administrator

Internship

- Students will be required to pay for liability insurance, provide their own transportation to internship sites, and cover any other expenses related to internship experiences. Students may be expected to travel distances to internships.
- Students will be required to complete a caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Students will be required to show documentation of 2 TB tests from within the past 12 months prior to their internship. A fee is charged for this service. Students may be required by the internship site to provide proof of immunizations prior to interning. Additional information will be provided upon acceptance into the program.

- Students will be required to show proof of an annual flu vaccine.
- Students are required to petition for an internship assignment. Students may petition by submitting a "Petition to Enter Internship" form to the Health Sciences Department office according to the following schedule:
- Spring semester internship deadline is September 30.
- Fall semester internship deadline is February 28.
- NWTC will make every effort to place students in the semester they request. However, NWTC cannot guarantee an internship site assignment in the semester being requested.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last five years. (For a list of equivalents, please contact a Counselor.)
- Typing proficiency of 30 words per minute (mandatory preadmission typing test to be taken at the NWTC Assessment Center).

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 65; Reading Comprehension,

78; Sentence Skills, 90. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

- Attend mandatory program orientation.

Flexible Learning Option

- The majority of Health Care Business Services program courses are offered on-line.
- The program may be completed in a part-time or full-time format.

The following certificates/technical diplomas may be applied toward this program:

- 901041, Health Care Business Services Certificate

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-103-121	Micro: Word-Intro	1
*10-501-101	Medical Terminology	3
*10-530-172	Healthcare Delivery Systems	2
*10-530-176	Health Data Management	2
*10-530-181	Intro to the Health Record	1
10-801-136	English Composition 1	3
*10-806-189	Basic Anatomy	3
**10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-103-131	Micro: Excel-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
*10-160-161	Insurance Health Principles	3
*10-530-155	Diagnostic/Procedure Coding	3
*10-530-178	Healthcare Law & Ethics	2
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		16

THIRD SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-103-141	Micro: Access-Intro	1
10-104-191	Customer Service	3
*10-160-143	Medical Practice Proc	3
*10-160-151	Healthcare Relations	2
*10-501-102	Intro to Dental Terminology	1
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
*10-160-140	HCBS Internship	3
OR		
*10-160-167	HCBS Capstone	3
*10-160-165	HCBS Organizational Resources	2
*10-160-166	Medical Billing Processes	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		17
TOTAL CREDITS		66

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.

It is recommended that students interested in pursuing a degree in Health Information Technology should take ICD Diagnosis Coding (10-530-197) and CPT Coding (10-530-184) in place of Diagnostic/Procedure Coding (10-530-155).

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-103-111 MICRO: WINDOWS/ COMPUTER BASICS ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. Blackboard, internet, and e-mail usage.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating/ modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/ Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-160-140 HEALTHCARE BUSINESS SERVICES INTERNSHIP ...career planning, resumes, interviews, search strategy, actual health care work experience, applied workplace improvements and ethical model. (Prerequisites: Accepted in the Health Care Business Services Program; 10-530-155, Diagnostic/Procedure Coding; Corequisite: 10-160-166, Medical Billing Processes)

10-160-143 MEDICAL PRACTICE PROCEDURES ...professional duties, medical scheduling, admissions, medical office software, 10-key, third-party payer processes, managed care procedures, empathy, diversity, medical records, confidentiality, information systems, regulation, office medical administration. (Prerequisites: 10-103-111, Micro: Windows Intro; 10-103-121, Micro: Word-Intro; 10-530-176, Health Data Management; 10-530-155, Diagnostic/ Procedure Coding; 10-160-161, Insurance Health Principles; Corequisite: 10-101-106, Accounting for Non-Accountants)

10-160-151 HEALTHCARE RELATIONS ...financing of healthcare, managed care participants and products, integrated systems, organizational structure, provider networks, purchasers, cost containment, quality of care, regulation, and accountability. (Prerequisite: 10-160-161, Insurance Health Principles)

10-160-161 INSURANCE HEALTH PRINCIPLES ...this course presents common health insurance terminology. Students are introduced to various insurance programs including: private health insurance, Workers' Compensation, disability insurance, hospital insurance, government plans including: Medicare, Medicaid and TriCare. (Corequisite: 10-530-172, Healthcare Delivery Systems)

10-160-165 HCBS ORGANIZATIONAL RESOURCES ...a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Corequisite: 10-160-143, Medical Practice Procedures)

10-160-166 MEDICAL BILLING PROCESSES ...optimizing key billing and collection processes; breaking down the billing and collection process; granting credit in a medical facility; examine expected performance outcomes and advanced billing practices. (Prerequisites: 10-101-106, Accounting for Non-Accountants; 10-160-143, Medical Practice Procedures)

10-160-167 HCBS CAPSTONE ... alternative to the internship. May include an in-depth study of a healthcare provider, business, career, or job shadowing. (Prerequisites: Accepted in the Health Care Business Services program; 10-530-155, Diagnostic/Procedure Coding; Corequisite: 10-160-166, Medical Billing Processes)

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-501-102 INTRODUCTION TO DENTAL TERMINOLOGY...this course introduces dental vocabulary and terms used in the dental office. Topics include word parts, root words and basic dental terminology.

10-530-155 DIAGNOSTIC/PROCEDURE CODING...the International Classification of Diseases and Current Procedural Terminology with emphasis on coding skills, use of this classification system in health care settings, its application for statistical and reimbursement purposes. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy)

10-530-172 HEALTHCARE DELIVERY SYSTEMS...examines the organization, financing, regulation, and delivery of health care services. Includes the study of healthcare professionals.

10-530-176 HEALTH DATA MANAGEMENT...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisite: 10-530-181, Intro to Health Record)

10-530-178 HEALTHCARE LAW & ETHICS ...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management; accepted in the Health Information Technology program, Health Care Business Services program or Medical Coding Specialist certificate)

10-530-181 INTRO TO THE HEALTH RECORD ... illustrate the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

This field is where healthcare meets the cutting edge of technology! The Bureau of Labor Statistics cites health information as one of the fastest growing occupations in the U.S. Health Information Technicians contribute to the quality of care by collecting, analyzing, and reporting health care data. This requires knowledge of disease, treatments, computer systems, and organizational skills.

Students who have an interest in the business and information aspects of health care, but are unsure of their preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes

- Manage health data.
- Apply coding and reimbursement systems.
- Use information technology systems to process information.
- Apply organizational management techniques.
- Model professional behaviors and ethics.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in the following settings: hospitals, clinics, nursing homes, mental health facilities, home health agencies, state and federal health agencies, and private industry as a (an):

- Coding Specialist
- Release of Information Specialist
- Health Information Technician
- Insurance/Business Specialist
- Reimbursement Coordinator
- Data Quality & Integrity Monitor
- Privacy and/or Security Officer
- Data Analyst
- HIM Supervisor
- Cancer Registrar

Professional Practice Experience

- Students will be required to provide their own transportation to assigned sites, and cover any other expenses related to professional experiences. Students may be expected to travel distances to assigned sites.
- Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Students are required to petition for a professional practice assignment. Students may petition by submitting a "Petition to Enter Professional Practice" form to the Health Sciences Department office according to the following schedule:
– Spring semester Professional Practice deadline is September 30
– Fall semester Professional Practice deadline is February 28
- NWTC will make every effort to place students in the semester they request. However, NWTC cannot guarantee an assignment in the semester being requested.
- Students will be required to show proof of an annual flu vaccine.

Accreditation

The Health Information Technology program is accredited by the Commission on the Accreditation for Health Informatics and Information Management Education (CAHIIM).

Board/Certification Examinations

Graduates of the program are eligible to take the national accreditation examination offered by the American Health Information Management Association (AHIMA) to become a Registered Health Information Technician (RHIT).

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Assessment or equivalent or ACT assessment taken within the last five years. (For a list of equivalents, please contact a Counselor.)
- Two semesters in High School, or one semester in College of Biology, or equivalent, with a grade of "C" or better.
- Typing proficiency of 30 words per minute (mandatory preadmission typing test to be taken at the NWTC Assessment Center).

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 78; Sentence Skills, 90. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

Curriculum

Students following the study plan below will complete the Health Information Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-103-121	Micro: Word-Intro	1
*10-501-101	Medical Terminology	3
*10-530-176	Health Data Management	2
*10-530-181	Intro to the Health Record	1
10-801-136	English Composition 1	3
*10-806-189	Basic Anatomy	3
**10-890-101	College 101	1
SEMESTER TOTAL		15

SECOND SEMESTER		
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
*10-530-178	Healthcare Law & Ethics	2
*10-530-182	Human Diseases for Hlth Profes	3
*10-530-184	CPT Coding	3
*10-530-197	ICD Diagnosis Coding	3
10-801-196	Oral/Interpersonal Comm	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		20

THIRD SEMESTER		
*10-530-160	Healthcare Informatics	4
*10-530-177	Healthcare Stats & Research	2
*10-530-185	Healthcare Reimbursement	2
*10-530-196	Professional Practice 1	3
*10-530-199	ICD Procedure Coding	2
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
*10-530-161	Health Quality Management	2
*10-530-194	HIM Organizational Resources	2
*10-530-195	Applied Coding	2
*10-530-198	Professional Practice 2	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		16
TOTAL CREDITS		67

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation.

Consequently, it is not part of the program credit requirements.

The following courses are offered in person and VC (video-conference):
- 10-530-177, Healthcare Stats & Research
- 10-530-160, Healthcare Informatics
- 10-530-161, Health Quality Management
- 10-530-196, HIT Professional Practice 1
- 10-530-198, HIT Professional Practice 2

- Attend mandatory spring program orientation.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Flexible Learning Option

- A majority of the Health Information Technology program courses are offered in an on-line format.
- This program may be completed in a part-time or full-time format.

Note
- A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.
- Students considering going on to a 4-year HIA Degree or Cancer Registrar Certification should consider taking General Anatomy & Physiology in place of Basic Anatomy.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-111 MICRO: WINDOWS/ COMPUTER BASICS ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. Blackboard, internet, and e-mail usage.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating/ modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-530-160 HEALTHCARE INFORMATICS...emphasizes the role of information technology in healthcare through an investigation of the electronic health record (EHR), business, and health information software applications. Learners will develop skills to assist in information systems design and implementation. (Prerequisites: Accepted into the Health Information Technology Program; 10-530-178, Healthcare Law & Ethics; 10-530-182, Human Disease for Hlth Profes; 10-530-197, ICD Diagnosis Coding; 10-530-184, CPT Coding; 10-103-111, Micro: Windows Intro; 10-103-121, Micro: Word Intro; 10-103-131 Micro: Excel-Intro; 10-103-151 Micro: PowerPoint-Intro)

10-530-161 HEALTH QUALITY MANAGEMENT...explores the programs and processes used to manage and improve healthcare quality. Addresses regulatory requirements as related to performance measurement, assessment, and improvement, required monitoring activities, risk management and patient safety, utilization management, and medical staff credentialing. Emphasizes the use of critical thinking and data analysis skills in the management and reporting of data. (Prerequisites: Accepted in the Health Information Technology Program; completion of 10-530-XXX third semester coursework; 10-103-131 Micro: Excel-Intro)

10-530-176 HEALTH DATA MANAGEMENT...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisite: 10-530-181, Intro to Health Record)

10-530-177 HEALTHCARE STATS & RESEARCH...explores the management of medical data for statistical purposes. Focuses on descriptive statistics, including definitions, collection, calculation, compilation, and display of numerical data. Vital statistics, registries, and research are examined. (Prerequisites: acceptance in Health Information Technology program; 10-530-176, Health Data Management; 10-530-178, Healthcare Law & Ethics; 10-530-182, Human Diseases for Hlth Profes; 10-530-197, ICD Diagnosis Coding; 10-530-184, CPT Coding; 10-103-131, Micro: Excel-Intro)

10-530-178 HEALTHCARE LAW & ETHICS ...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management; accepted in the Health Information Technology program, Health Care Business Services program or Medical Coding Specialist certificate)

10-530-181 INTRO TO THE HEALTH RECORD ... illustrate the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.

10-530-182 HUMAN DISEASE FOR THE HEALTH PROFESSIONS ...this course focuses on the common diseases of each body system as encountered in all types of health care settings by health information professionals. Emphasis is placed on understanding the etiology (cause), signs and symptoms, diagnostic tests, and treatment (including pharmacologic) of each disease. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy)

10-530-184 CPT CODING...assign CPT codes supported by medical documentation at entry level; apply CPT instructional notations, conventions, rules, and official coding guidelines; case studies and actual medical record documentation. (Prerequisites: Accepted in the Health Information Technology program or Medical Coding Specialist certificate10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-182, Human Diseases for Health Professions)

10-530-185 HEALTHCARE REIMBURSEMENT...compare and contrast health care payers, illustrate the reimbursement cycle, comply with regulations for fraud and abuse. Assign Diagnosis Related Groups, Ambulatory Payment Classifications, and Resource Utilization Groups at entry-level. (Prerequisites: 10-501-101, Medical Terminology; 10-530-176, Health Data Management; 10-530-182, Human Diseases for Health Professions; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-197, ICD Diagnosis Coding; 10-530-199, ICD Procedure Coding; 10-530-184, CPT Coding)

10-530-194 HIM ORGANIZATIONAL RESOURCES ...a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Corequisite: 10-530-161, Health Quality Management)

10-530-195 APPLIED CODING... assign ICD and CPT/HCPCS codes supported by medical documentation at intermediate level. Prepare appropriate physician queries in accordance with compliance guidelines and assign codes to optimize appropriate reimbursement. (Prerequisites: 10-530-184, CPT Coding; 10-530-185, Healthcare Reimbursement; 10-530-197, ICD Diagnosis Coding; 10-530-199, ICD Procedure Coding)

10-530-196 PROFESSIONAL PRACTICE 1 ...this supervised clinical provides application of previously acquired skills and knowledge with experiences in the technical procedures of health record systems in a health care facility, discussion of clinical situations. (Prerequisites: 10-530-178, Healthcare Law & Ethics; 10-530-184, CPT Coding; 10-530-197, ICD Diagnosis Coding; Corequisites: 10-530-177, Healthcare Stats & Research; 10-530-199, ICD Procedure Coding; 10-530-160, Healthcare Informatics)

10-530-197 ICD DIAGNOSIS CODING ...prepares students to assign ICD diagnosis codes supported by medical documentation with entry level proficiency. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD diagnosis codes to case studies and actual medical record documentation. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; Corequisites: 10-530-181, Intro to Health Records; 10-530-182, Human Diseases for Health Professions; accepted in Health Information Technology program or Medical Coding Specialist certificate)

10-530-198 PROFESSIONAL PRACTICE 2 ...this supervised clinical provides application of previously acquired skills and knowledge, discussion of clinical situations, preparation for the certification examination and pre-graduation activities. (Prerequisites: 10-530-196, Professional Practice 1; 10-530-160, Healthcare Informatics; 10-530-199, ICD Procedure Coding; 10-103-141, Micro: Access-Intro; Corequisites: 10-530-161, Health Quality Management; 10-530-195, Applied Coding; 10-530-194 HIM Organizational Resources)

10-530-199 ICD PROCEDURE CODING ...prepares students to assign ICD procedure codes supported by medical documentation with entry level proficiency. Students apply instructional notations, conventions, rules, and official coding guidelines when assigning ICD procedure codes to case studies and actual medical record documentation. (Prerequisites: 10-501-101, Medical Terminology; 10-806-189, Basic Anatomy; 10-530-182, Human Diseases for Health Professions; 10-530-181, Intro to Health Records)

Heating, Ventilation, Air Conditioning and Refrigeration Technology
Program Code 106011 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Heating, Ventilation, Air Conditioning and Refrigeration Technology program prepares students to install, service, troubleshoot, and repair HVAC/R systems used for the environmental control of buildings and product processes.

Program Outcomes
• Startup, service, and repair HVAC/R systems.
• Troubleshoot HVAC/R systems.
• Develop, wire, and troubleshoot HVAC/R control circuits.
• Perform HVAC/R performance tests.
• Design and install HVAC/R piping systems.
• Evaluate airflow systems for new and existing applications.
• Determine heating and cooling demand requirements.
• Select heating and cooling equipment and auxiliary components.
• Safely utilize industry standard tools, meters, and test instruments.
• Communicate and document detailed service reports effectively.
• Prepare for EPA Refrigerant Handling Exam.
• Earn OSHA 10 certification.
• Earn CPR certification.
• Earn AED certification.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtcgetting started.
• High school algebra or equivalent
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65, Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Mechanical Contractor HVAC/R Technician: installs, services, troubleshoots, and repairs HVAC/R systems at a customerís job site.

Facilities Maintenance HVAC/R Technician: installs, services, troubleshoots, and repairs HVAC/R systems as part of a maintenance staff.

HVAC/R Equipment Manufacturer Technician: assists service companies in locating, repairing, and preventing factory defects and service problems.

Wholesale Service Representative: assists HVAC/R contractors with the selection, application, and procurement of HVAC/R equipment.

Commercial HVAC/R Systems: works with the HVAC/R systems used in commercial applications such as office buildings, schools, stores, supermarkets, and restaurants. Duties include, but not limited to, installing, servicing, troubleshooting, and repairing walk-in coolers/freezers; reach-in coolers/freezers; ice makers; large air conditioning, heating, and air distribution systems; hydronic, steam, and forced air heating systems; roof top HVAC/R systems; and digital building automation control systems.

Industrial HVAC/R Systems: works with HVAC/R systems used in an industrial setting such as manufacturing, processing, and packaging plants. Duties include, but not limited to, installing, servicing, troubleshooting, and repairing large HVAC/R equipment used in the manufacturing process, such as drive-in coolers/freezers; process chillers and boilers, dust collection systems, plant air conditioning and heating, digital control of process, and building HVAC/R equipment.

Residential HVAC/R Systems: require the Technician to work with HVAC/R systems used in the home. Duties would include, but not limited to, installing, servicing, troubleshooting, and repairing refrigerator/freezers, central air conditioning system operating controls.

With additional education and/or work experience, graduates may find other opportunities for employment.

• HVAC/R Business Owner
• Energy Management Technician
• Engineering Assistant for HVAC/R Systems

Curriculum
Students following the study plan below will complete the HVAC/R associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
OR		
10-103-121	Micro: Word-Intro	1
OR		
10-103-122	Micro: Word-Part 2	1
OR		
10-103-131	Micro: Excel-Intro	1
OR		
10-103-132	Micro: Excel-Part 2	1
OR		
10-103-141	Micro: Access-Intro	1
OR		
10-103-142	Micro: Access-Part 2	1
OR		
10-103-151	Micro: PowerPoint-Intro	1
10-601-111	HVAC/R Electrical Fundamentals	3
10-601-116	HVAC/R Mech Svc Fund & Safety	3
10-601-133	HVAC/R Refrigeration Fund	3
10-804-107	College Mathematics	3
10-809-199	Psychology Of Human Relations	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-601-113	HVAC/R Refrig/Air Cond Syst	3
10-601-121	HVAC/R Heating Fundamentals	3
10-601-127	HVAC/R Control Circuits	3
10-601-128	HVAC/R Heating Systems	3
10-601-159	Mech Serv Apps & Sheet Metal	3
**10-801-136	English Composition 1	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-601-131	HVAC/R Heating System Applic	3
10-601-132	HVAC/R Air Conditioning Applic	3
10-601-147	HVAC/R Motor Control Appl	3
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-601-135	HVAC/R Hydronic System Applic	3
10-601-139	HVAC/R Building Plans and Spec	1
10-601-141	HVAC/R Systems Service	3
10-601-143	HVAC/R Refrigeration Appl	3
10-601-145	HVAC/R Control System Applic	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		16
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program requirements.

**Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-111 MICRO: WINDOWS/ COMPUTER BASICS ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. Blackboard, internet, and e-mail usage.

10-103-121 MICRO: WORD- INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. (Corequisite: 10-103-121, Micro: Word-Intro)

10-103-131 MICRO: EXCEL- INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, creating macros, Excel's database features and analysis tools. (Corequisite: 10-103-131, Micro: Excel-Intro)

10-103-141 MICRO: ACCESS- INTRODUCTION ...creating/ modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-142 MICRO: ACCESS-PART 2 ...creating advanced queries, custom forms, multi-page forms, custom reports, pivot tables, pivot charts, and labels. (Corequisite: 10-103-141, Micro: Access-Intro)

10-103-151 MICRO: POWERPOINT- INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/ Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-103-160 MICRO: OUTLOOK ...use email, distribution lists, signatures, attachments, and task lists; schedule appointments and meetings using the calendar; flag, filter, sort, and merge contacts, use message delivery options; archive messages and folders.

10-601-111 HVAC/R ELECTRICAL FUNDAMENTALS ...AC and DC electricity, application of Ohm's Law principles to circuits, electrical power supplies, wiring materials, meter operation, test and troubleshoot switching circuits using industry standard meters and techniques. (Prerequisite: Accepted into HVAC Tech Program)

10-601-113 HVAC/R REFRIGERATION/ AIR CONDITIONING SYSTEMS ...residential/light commercial refrigeration and air conditioning system analysis, start-up, service, repair and troubleshooting using industry standard tools and techniques, evacuation, recovery, charging techniques, Federal certification preparation. (Prerequisites: 10-601-121, HVAC/R Heating Fundamentals and 10-601-127, HVAC/R Control Circuits; Co-requisite 10-601-128, HVAC/R Heating Systems)

10-601-116 HVAC/R MECHANICAL SERVICE FUNDAMENTALS & SAFETY ...standard first aid, CPR, OSHA 10-hour course, ladder safety, lockout/tagout electrical procedures, mechanical math, measurement, fasteners, proper hand and power tool usage. (Prerequisites: Accepted into the HVAC/R Technology Program. Co-requisites: 10-601-111, HVAC/R Electrical Fundamentals, 10-601-133, HVAC/R Refrigeration Fundamentals)

10-601-121 HVAC/R HEATING FUNDAMENTALS ...principles of combustion for fossil fuels, burner set-up, heating system basics, combustion testing for residential systems, and basic mechanical heating service. (Prerequisites: 10-601-111, HVAC/R Electrical Fund; 10-601-133, HVAC/R Refrig Fund; 10-601-116, HVAC/R Mech Svc Fund & Safety; Corequisites: 10-601-127, HVAC/R Control Circuits; 10-601-159, Mech Serv Apps & Sheet Metal)

10-601-127 HVAC/R CONTROL CIRCUITS ...relay and HVAC/R electrical control circuit schematic development and analysis; wiring, testing and troubleshooting relay and HVAC/R control circuits; diagnose common HVAC/R system problems by analyzing the control circuit. (Prerequisites: 10-601-111, HVAC/R Electrical Fund; 10-601-133, HVAC/R Refrig Fund; 10-601-116, HVAC/R Mech Svc Fund & Safety; Corequisites: 10-601-121, HVAC/R Heating Fund; 10-601-159, Mech Serv Apps & Sheet Metal)

10-601-128 HVAC/R HEATING SYSTEMS ...heating controls, heating control circuit basics, analysis of electrical controls for fossil fuel systems, wiring, start-up and service of residential furnaces. (Prerequisites: 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits; Co-requisite 10-601-113 HVAC/R Refrigeration and AC Appl.)

10-601-131 HVAC/R HEATING SYSTEM APPLICATIONS ...interpreting control system diagrams, control circuit analysis, service and troubleshooting residential and commercial fossil fuel heating systems, rooftops and split systems. (Prerequisite: 10-601-132, HVAC/R Air Conditioning Applications; Corequisite: 10-601-147, HVAC/R Motor Control Application)

10-601-132 HVAC/R AIR CONDITIONING APPLICATIONS ...air properties, air system component application fundamentals, indoor air quality fundamentals, system measurement, adjustment, and troubleshooting to control temperature and humidity in HVAC systems. (Prerequisites: 10-601-113, HVAC/R Refrig/Air Cond Syst; 10-601-128, HVAC/R Heating Systems; Corequisite: 10-601-147, HVAC/R Motor Control Appl)

10-601-133 HVAC/R REFRIGERATION FUNDAMENTALS ...principles of refrigeration and air conditioning, temperature, heat and pressure measurement, system component operation, testing for proper system operation using industry standard tools and practices. (Prerequisites: Accepted into HVAC/R or Marine Construction program; Corequisites: 10-601-116, HVAC/R Mech Svc Fund & Safety; 10-601-111, HVAC/R Electrical Fundamentals)

10-601-135 HVAC/R HYDRONIC SYSTEM APPLICATIONS ...hydronic fundamentals, piping systems, pipe sizing, boiler applications, system design fundamentals, system piping installation for conventional systems, radiant systems, and forced air systems, system component operation, selection service and troubleshooting. (Prerequisites: 10-601-131, HVAC/R Heating Systems Applications; 10-601-147, HVAC/R Motor/Control Applications; Corequisite 10-601-143 HVAC/R Refrigeration Applications)

10-601-139 HVAC/R BUILDING PLANS AND SPECIFICATIONS ...techniques for reading various types of construction drawings, specifications, and other related documents with an emphasis on the types of drawings and specifications that are commonly used in the HVAC trade (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, HVAC/R Motor Control Applications. Corequisites: 10-601-135, HVAC/R Hydronic System Applications; 10-601-143, HVAC/R Refrigeration Applications)

10-601-141 HVAC/R SYSTEMS SERVICE ...analyze, set up, and troubleshoot three-phase motor starting systems, damper actuators, and economizers; advanced service and troubleshooting of commercial HVAC/R systems including rooftops, and split systems. (Prerequisites: 10-601-143, HVAC/R Refrigeration Applications; 10-601-135, HVAC/R Hydronic System Applications; Corequisite: 10-601-145 HVAC/R Control Systems Applications)

10-601-143 HVAC/R REFRIGERATION APPLICATIONS ...refrigeration system piping, load calculation, sizing, and component selection; service, troubleshoot and repair commercial refrigeration systems including walk-in coolers/freezers, reach-in coolers/freezers and ice machines. (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, HVAC/R Motor Control Applications; Corequisite: 10-601-135 Hydronic System Applications)

10-601-145 HVAC/R CONTROL SYSTEM APPLICATIONS ...HVAC/R electric, electronic, pneumatic, and computerized control systems for hydronic and air systems. Control application fundamentals, system wiring, start-up and troubleshooting. (Prerequisites: 10-601-135, HVAC/R Hydronic System Applications; 10-601-143, HVAC/R Refrigeration Applications Corequisite: 10-601-141 HVAC/R System Service)

10-601-147 HVAC/R MOTOR CONTROL APPLICATIONS ...analyze and troubleshoot single-phase AC induction motors and motor starting components used in the HVAC/R industry with an emphasis on refrigeration/air conditioning compressor motors and components. (Prerequisites: 10-601-113, HVAC/R Refrig/Air Cond Syst; 10-601-128, HVAC/R Heating Systems; Corequisite: 10-601-132, HVAC/R Air Conditioning Applications)

10-601-159 HVAC MECHANICAL SERVICE APPLICATIONS/SHEET METAL ...copper soldering and brazing, oxy-acetylene torch usage for welding and brazing steel, sheet metal layout and fabrication, PVC assembly and black iron piping procedures. (Prerequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration Fund; 10-601-116, HVAC/R Mech Svc Fund & Safety; Corequisite: 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits)

Offered at the Green Bay and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Hotel and Restaurant Management prepares students for a variety of mid-management positions in lodging operations, food service operations, and tourism services. The program is grounded in experiential learning and involves extensive internship requirements.

Program Outcomes

- Develop a personal career plan in the hospitality industry.
- Maximize profits in the lodging and food service industry.
- Manage cleaning and sanitation operations in the food service and lodging industry.
- Maximize facility productivity.
- Understand preventive maintenance and equipment service.
- Manage quality customer service systems.
- Apply product presentation principles in the hospitality industry.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

Tourism is Wisconsin's fastest-growing industry and there are many interesting and challenging opportunities for relocating to work throughout Wisconsin, the Midwest, and the United States.

A graduate of this program will have the potential for employment in the following areas:

Front Office Manager: coordinates the reception and control center for servicing guests, directs and supervises front office staff, and maximizes room revenue through room inventory control.

Event Service Manager: coordinates activities of staff and personnel to make arrangements for group meetings and events.

Food Service Manager: coordinates food service activities of a hotel/restaurant or similar establishment, plans food service activities, schedules employees, oversees service, and controls costs.

Executive Housekeeper: supervises housekeeping employees, trains new hires, requisitions supplies, controls inventory, and inspects personnel work assignments.

Sales Manager: plans and administers sales programs to generate sales in a hotel or tourism organization, organizes prospect files, plans and prepares advertising and promotional materials, and arranges for publicity.

With additional education and/or work experience, graduates may find other opportunities for employment.

- General Manager
- Marketing Director
- Restaurant Manager
- Catering Manager

Curriculum

Students following the study plan below will complete the Hotel & Restaurant Management associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-101-190	Accounting-QuickBooks	1
10-102-158	Business Principles	3
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-105-102	Career Planning	2
10-109-114	Hotel Management	3
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-104-101	Selling Principles	3
10-104-191	Customer Service	3
10-109-126	Hospitality Finance	3
10-801-198	Speech	3
10-809-195	Economics	3
SEMESTER TOTAL		15

THIRD SEMESTER		
10-102-160	Global Business Mgmt	3
10-104-110	Marketing Principles	3
10-104-119	Social Media Marketing	3
10-105-103	Career Preparation	1
10-109-127	Hospitality Facilities Mgmt	3
10-145-185	Organizing Your Small Business	3
OR		
10-196-145	Workplace Innovation	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		19

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-104-125	Event Marketing	3
10-109-168	Restaurant Management	3
10-109-199	Hosp Tour Career Experience	2
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

The following certificates/technical diplomas may be applied toward this program:

- 901095, Hotel & Restaurant Management Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-102-158 BUSINESS PRINCIPLES ...economics and business; global business; ethics and social responsibility; business ownership; entrepreneurship; business management; marketing; managing financial resources; legal issues impacting business; using technology to manage information.

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-119 SOCIAL MEDIA MARKETING ...understand the social media revolution. This course will provide students with the practical knowledge and insights needed to successfully plan, implement, manage and measure social media marketing efforts.

10-104-125 EVENT MARKETING... planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-109-114 HOTEL MANAGEMENT ...lodging classification, ownership/affiliation, hotel/front office organization, equipment, reservations, registration, guest services, guest accounting, credit monitoring, check-out/settlement, night audit, management functions, room statistics, yield management, staffing.

10-109-126 HOSPITALITY FINANCE ...purchasing/receiving controls, storing/issuing controls, production controls, monitoring activities, sales controls, beverage controls, labor controls.

10-109-127 HOSPITALITY FACILITIES MGMT ...staffing housekeeping operations, facilities safety and security, cleaning routines, material selection, laundry operations, controlling costs in housekeeping and maintenance departments, facility systems.

10-109-168 RESTAURANT MANAGEMENT ...food/beverage industry, product classifications, responsible service; bar/kitchen equipment/organization; maintaining clean/sanitary facilities; staffing, training, supervising food/beverage employees; promotions planning; budgeting/cost controls of food/beverage operations.

10-109-199 HOSPITALITY/TOURISM CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-145-185 ORGANIZING YOUR SMALL BUSINESS ...the components of small business ownership; examining a variety of small business startup and operation scenarios. Assesses your own readiness to begin the entrepreneurial adventure.

10-196-145 WORKPLACE INNOVATION ...use of inventive thinking techniques and innovative methods to improve work processes in multiple workplace environments; research and analyze the use of technology in businesses to promote innovation in the workplace; develop an innovative, entrepreneurial, and intrepreneurial mindset.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Human Resources Associate Degree program prepares the learner for success in the dynamic work environments of: employment law, training and development of employees, compensation and benefits administration, labor relations supporting bargaining agreements, and wellness and safety initiatives.

Program Outcomes

- Define and describe the functions of human resource management and employee relations to include policies, complaints, and harassment issues.
- Administer human resource functions through technology and human resource information systems (HRIS).
- Develop and prepare reports necessary to carry out the functions of the human resource department.
- Provide assistance for the recruitment and retention of employees.
- Manage the interpretation and application of established human resource policies.
- Develop and evaluate effective training programs.
- Utilize a variety of compensation and benefit criteria.
- Utilize ethical and legal standards in human resource decision making.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/getting started.)

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- It is recommended that a student have basic computer skills in Word, Excel, and PowerPoint prior to entering the Human Resources program.

Employment Potential

Human Resources Generalist

Hiring Coordinator

Payroll/Benefits Coordinator

Staffing Coordinator

Labor Relations Specialist

Compensation, Benefits, and Job Analysis Specialists

Training and Development Specialist

With additional education and/or work experience, graduates may also find employment as a Human Resource Manager.

The following certificates/technical diplomas may be applied toward this program:
- 901161, Human Resource Compliance Certificate
- 901162, Organizational Safety and Health Certificate
- 901163, Employee Benefits, Relations, and Development Certificate

Curriculum

Students following the study plan below will complete the Human Resources associate degree in the number of semesters shown. For alternate study plans, refer to the information in the Related Links area at the right of this page.

FIRST SEMESTER		CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-105-102	Career Planning	2
10-196-164	Supervisors-Personal Skills	3
10-196-193	Human Resource Mgmt	3
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-116-110	Organizational Health/Wellness	3
10-196-134	Legal Issues-Supervisors	3
10-801-196	Oral/Interpersonal Comm	3
10-801-198	Speech	3
10-809-197	Contemporary Amer Society	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-184	Business Finance/Budgeting	3
10-105-103	Career Preparation	1
10-116-111	Employee Recruitment/Retention	3
10-116-112	Compensation/Benefits Admin	3
10-196-136	Safety-Workplace	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-116-113	Labor Relations & Negotiations	3
10-116-114	Training for Organizations	3
10-116-115	Legal Issues & Compliance-Adv	3
10-116-199	Human Res Career Experience	2
10-196-169	Diversity in the Workplace	3
SEMESTER TOTAL		15
TOTAL CREDITS		67

CURRICULUM NOTE

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Many courses in this program are offered in a variety of formats such as accelerated, online, in person or video conference.

Most credits from this degree can be transferred to some four-year colleges for learners interested in pursuing a bachelor's degree.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w/ Business Apps)

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-116-110 ORGANIZATIONAL HEALTH AND WELLNESS ...introduces the student to the concepts involved in organizational wellness programs and the impact from a financial and human asset standpoint. Learners will research wellness programs, develop proposed systems for district-based organizations, and calculate projected cost savings from the implementation of these programs. Insurance principles will also be examined by the learner.

10-116-111 EMPLOYEE RECRUITMENT/RETENTION ...applies the skills and tools necessary to hire and retain qualified employees. Legal issues, testing, screening, interviewing, selecting and negotiating techniques will be demonstrated and assessed for each learner. (Prerequisite: 10-801-136, English Composition 1)

10-116-112 COMPENSATION/BENEFITS ADMIN ...applies the skills and tools necessary to design, implement and manage a compensation and benefits program as a tool for recruitment, retention and performance management of employees.

10-116-113 LABOR RELATIONS & NEGOTIATIONS ...introduces the participant to the history of the labor movement and includes the legal collective bargaining processes while applying the learned skills with case studies, a mock negotiation of a realistic collective bargaining contract, and the simulation of a grievance arbitration.

10-116-114 TRAINING FOR ORGANIZATIONS ...applies the skills and tools necessary to implement the training cycle of assessment, design, implementation and evaluation. Each learner will develop and present a complete training project based upon adult learning theory and instructional design techniques.

10-116-115 LEGAL ISSUES & COMPLIANCE-ADV ...advanced legal issues compliance and recordkeeping; detailed overview and analysis of major employment laws. Learners will analyze and practice recordkeeping and compliance with the laws in the workplace such as FMLA, ADA, EEOC, OSHA, and other current relevant employment laws. (Pre-requisite: 10-196-134, Legal Issues-Supervisors)

10-116-199 HUMAN RESOURCES CAREER EXPERIENCE ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition 1; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-196-134 LEGAL ISSUES-SUPERVISORS ...legal practices of recruiting, interviewing, hiring, selection, evaluation/promotion, employee discipline, firing, EEOC and nondiscrimination, employee privacy, workplace harassment, FMLA, ADA and unions.

10-196-136 SAFETY-WORKPLACE ...safety awareness, federal/state/local compliance, inspections, risk analysis, workplace violence, substance abuse, health hazards, first aid, CPR, fire and electrical safety, and emergency preparedness.

10-196-164 SUPERVISORS-PERSONAL SKILLS ...time management and personal planning, emotional intelligence, effective communication, assertiveness and stress management related to the challenges of a supervisor.

10-196-169 DIVERSITY IN THE WORKPLACE ...analyze the effect of perceptions, attitudes, biases, and organization culture on diversity, dealing with barriers, measuring progress, and celebrating success.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

A Northcentral Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Northcentral Technical College.

Program Description

The Human Services Alcohol & Other Drug Abuse associate degree program is designed for individuals interested in working with youth, the elderly, corrections clients or providing services to the disabled while focusing on addiction issues. The degree prepares learners for entry-level positions in a variety of human service agencies.

Program Outcomes

• Clinically evaluate for substance use disorders and treatment needs
• Develop treatment plans
• Facilitate referral to meet needs
• Demonstrate case management skills
• Demonstrate counseling skills with individuals, groups and families
• Provide culturally relevant education related to substance abuse
• Document and maintain clinical records according to agency, federal and state guidelines
• Adhere to accepted ethical and behavioral conduct

Requirements for Program Entry

• A paper application can be requested by emailing admissions@ntc.edu or calling 715.675.3331, Ext. 5860. Online applications are available at www.ntc.edu.
• OPTIONAL: High school transcripts are not required for acceptance to this program, but may be used to show proof of prerequisites. High school transcripts may also contain ACT or Accuplacer scores taken while still in high school (may meet testing requirements if taken within the last 5 years).
• If applicable, include a copy of college transcripts.
• Provide proof of one of the following: Associate or bachelor's degree, a copy of ACT or Accuplacer test scores. (Reading Comprehension: Accuplacer: 80, ACT: 18; Arithmetic: Accuplacer: 47, ACT: 18; Sentence Skills: Accuplacer: 86, ACT: 18. If you score below requirements on any portion of the ACTor Accuplacer, you will need to complete Remediation with NTCís Learning Center or a similar service at another college. Questions regarding Remediation and how to complete can be directed to admissions@ntc.edu or 715.675.3331, Ext. 5860.)
• If you have an outstanding balance at NTC you are required to pay it in full

prior to submitting an application. All application materials will be returned to you if the outstanding balance is not paid in full at the time of application.
• If information indicates that you have been convicted of a crime or have charges pending, you must speak with a program faculty member at Northcentral Technical College.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

Potential employment includes: Substance abuse counseling, correctional facilities, employee and student assistance programs, and various community and social service agencies.

Note
• Health care facilities participating in field experiences require an official criminal background check in compliance with Wisconsin Statutes 1998 Caregiver Law.
• Admitted students may be invited to attend the Human Services program orientation; attendance is strongly recommended.
• Field Experiences are required as part of the program. These may be unpaid. Please work with your program faculty to establish Field Experience I & II sites.
• Health care facilities participating in field experiences require students to complete a health history with examination and recommendation from a physical including documentation regarding immunity status for rubella, rubeola, (measles), varicella (chickenpox), and mumps prior to the start of field experiences. Also, a negative PPD (TB skin test) must be documented within the 3 months prior to beginning an field experiences. If a positive PD is noted, the student will need to provide documentation and certification by a licensed physician that he/she is not a health risk to vulnerable third parties.
• Students will be required to cover any expenses related to the field experiences.

Curriculum

The Human Services - AODA program is a two-year, four-semester collaborative program between Northcentral Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus and will take part in online distance learning courses available through NTC. Upon graduation, a student will have completed 70 credits. Students completing coursework at the NWTC Campus will take courses in the following order:

FIRST SEMESTER

		CREDITS
*10-520-101	Introduction to Human Services	3
10-550-170	Understanding Substance Abuse	3
10-550-175	Personal and Professional Dev	1
10-550-178	Intro to Counseling Theory	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**16**

SECOND SEMESTER

*10-550-172	Group Facilitation	3
10-550-173	Psychopharmacology	3
OR		
10-550-174	Overview of Mental Disorders	3
10-550-179	Methods of AODA Counseling	3
10-801-196	Oral/Interpersonal Comm	3
10-809-159	Abnormal Psychology	3
10-809-188	Developmental Psychology	3
SEMESTER TOTAL		**18**

THIRD SEMESTER

*10-520-106	Human Sexuality	3
*10-520-109	Child and Adolescent Behavior	3
10-520-121	Field Experience I	3
10-544-201	GERO: Intro to Gerontology	3
10-550-177	AODA Assessment and Diagnosis	3
*10-520-143	Crisis Intervention and Stress Management	3
SEMESTER TOTAL		**18**

FOURTH SEMESTER

10-520-119	Advanced Counseling Theory	3
10-520-122	Field Experience II	3
10-550-176	Ethical AODA Case/Record Mgmt	3
10-801-195	Written Communication	3
10-804-107	College Mathematics	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		**18**
TOTAL CREDITS		**70**

CURRICULUM NOTE
*Courses taught at NWTC via Distance Learning from Northcentral Technical College

For students seeking AODA licensure, please complete 90-550-1, AODA Certificate.

• Admission and Notification Priority: Applicants who meet the admission requirements will be admitted in order of completed application dates. Accepted students will be given the option to defer their start date two consecutive times. Should a candidate accept an admittance date and then withdraw less than one month before the semester begins, the candidate will need to reapply.

PLEASE NOTE: Applicants from the NWTC District will be admitted in Fall semester only.

• For more information, please call Toll Free: 1.888.NTC.7144

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-520-101 INTRODUCTION TO HUMAN SERVICES ...examine the evolution of the human services field. Distinguish the various types of human service agencies and occupations available in the field. Demonstrate the qualities of the field professionals. Complete 10 hours of community service at an agency of learner's choice outside of class time. Assess boundaries and ethical issues commonly found in the human services professions. Apply reflective practitioner methods.

10-520-106 HUMAN SEXUALITY ...learners will evaluate human sexual behavior across the lifespan. Evaluate the history of sex. Analyze sexology. Differentiate between gender roles. Identify psychological differences between sexes. Explore differences in sexual orientation, sexually transmitted diseases and methods of contraception. Analyze sexual abuse and sex for sale. Assess boundaries and sexual issues commonly found when discussing sexual issues with clients. Apply reflective practitioner methods.

10-520-109 CHILD AND ADOLESCENT BEHAVIOR ...Child and Adolescent Behavior is a course examining problematic behavior issues often encountered with children and adolescents in the field of human services. This examination is conducted in three parts. An understanding the process of healthy child and adolescent development in engaged in the early stages of the course. With this understanding, the course then addresses numerous problematic environmental, situational, and neurological issues that impede healthy development; and the diagnostic results of these impediments. Finally, the course comprehensively addresses systematic, therapeutic and medicinal interventions for various diagnostic disorders. The course focuses on strength-based models and trauma-sensitive approaches, and is solution-based to prepare students for successful integration to human services professions and/or further study in the field. (Prerequisite: 10-809-188, Developmental Psychology)

10-520-119 ADVANCED COUNSELING THEORY ...This course is an extension of skills already learned in classes such as Introduction to Counseling, Behavior Assessment, and Abnormal Psychology. Students will learn about the skills and techniques used in cognitive-behavioral therapy, and will learn how to apply specific therapies to specific needs and mental health diagnoses. Students will also learn about different theoretical orientations to mental health problems with a special emphasis on the contrast between cognitive-behavioral and psychoanalytic theories. Crisis intervention techniques, skills and theory will be discussed in some depth with an emphasis on the helperís role in providing those services; as well as the helperís potential to fall victim to the effects of such experience. Modern film will be used to provide examples as well as material for discussion during this course. (Prerequisites: Accepted to Human Services-AODA program; 10-520-115, Introduction to Counseling; 10-809-159, Abnormal Psychology)

10-520-121 FIELD EXPERIENCE I ...Field Experience 1 is a class designed to introduce the student to the field AODA Human Services by providing the student with actual work experience in an AODA human service agency. Students will provide a minimum of 144 hours of service to the agency of their choice, with direct supervision provided by the agency supervisor. The student will work with the agency to define the individual learning objectives to be obtained during the course of the internship. The goal is to facilitate the student's transition into the work world. Students will also have 18 hours of classroom lecture. (Prerequisites: Accepted into the Human Services Program; 10-550-178, Introduction to Counseling; 10-550-179, Methods AODA Counseling; 10-550-172, Group Facilitation; successful completion of background check on www.CertifiedBackground.com and enter package code NF54.)

10-520-122 FIELD EXPERIENCE II ...Field Experience 2 is the second of two field experience courses designed to introduce the student to the field of Human Services by providing the student with actual work experience in a human service agency. Students will provide a minimum of 144 hours of service to the agency of their choice, with direct supervision provided by the agency supervisor. Students will also have 18 hours of lecture-based instruction. *Students must complete an application for this class. The application and cut-off dates for Field 2 can be found at http://coursecontent.ntc.edu/humanservices/fieldexperience/. The student will work with the agency to define the individual learning objectives to be obtained during the course of the internship. The goal is to facilitate the student's transition into the work world. (Prerequisites: Accepted in the Human Services program; 10-520-121, Field Experience 1)

10-520-143 CRISIS INTERVENTION AND STRESS MANAGEMENT ...explore techniques and approaches to crisis intervention and stress management for providers in the human services field. Determine strategies for initial intervention, diffusion and assessment, resolution and/or referral with emphasis on safety. Explore psychological processes regarding the short- and long-term approach to stress. Determine secondary traumatization, burnout and remediation techniques. Evaluate critical incident debriefing. Assess boundaries and ethical issues commonly found with crisis intervention and stress management. Apply reflective practitioner methods.

10-544-201 GERO: INTRO TO GERONTOLOGY ...a general overview of the field of aging. Topics include demographic, biological, psychological, and social aspects of the aging process.

10-550-170 UNDERSTANDING SUBSTANCE ABUSE ...a holistic approach including epidemiology, etiology and definitions; prevention and treatment, social and health care institutions and resource agencies and ethics and legal issues in the helping profession with a focus on self-attitudes, values and goals.

10-550-172 GROUP FACILITATION ...learners are introduced to group counseling techniques such as facilitating the process of forming a group, determining group type, purpose, size, leadership, establishing goals and clarifying group rules. (Corequisite: 10-550-179, Methods of AODA Counseling)

10-550-173 PSYCHOPHARMACOLOGY ...learners will be introduced to the basic concepts of psychopharmacology and the function of the organs and systems of the human body and brain.

10-550-174 OVERVIEW OF MENTAL DISORDERS ...learners will be introduced to the symptomology and etiology and classification of psychiatric disorders and treatment.

10-550-175 PERSONAL AND PROFESSIONAL DEVELOPMENT... this course will introduce the personal and professional qualities and responsibilities AODA counselors should incorporate into their practice. Learners will clarify personal values and beliefs while examining their strengths and weaknesses. The course content will include ethical issues surrounding substance abuse counseling.

10-550-176 ETHICAL AODA CASE AND RECORD MANAGEMENT ...covers ethical case management, coordination of integrative services for AODA clients and the accurate management of treatment records. (Prerequisite: 10-550-177, AODA Assessment and Diagnosis)

10-550-177 AODA ASSESSMENT AND DIAGNOSIS ...learners develop a working knowledge of gathering and interpreting information used in forming diagnoses based on the criteria in the DSM-IV TR. Learners will explore various diagnostic tools and determine the level of care utilizing the Wisconsin UPC. (Prerequisite: 10-550-170, Understanding Substance Abuse)

10-550-178 INTRO TO COUNSELING THEORY ...learners are introduced to the basic counseling skills and will begin to examine the counseling theories utilized in the human services professions.

10-550-179 METHODS OF AODA COUNSELING ...learners are introduced to a number of counseling theories and techniques that can be utilized in the human services profession. The theories will be explored in relation to substance abuse counseling. (Prerequisite: 10-550-178, Intro to Counseling Theory)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Individualized Technical Studies program is intended for currently employed individuals who have a specific career objective that cannot be met by existing degree programs. By combining state board approved courses from two or more major areas of study, the student, along with an occupational advisor, designs an occupational degree program into a unique associate degree.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Completion of all recommended activities to address math and reading skills deficiencies.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 20; Reading Comprehension: 20; Sentence Skills: 20. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

With the growth of employment opportunities in small and mid-sized firms, employers increasingly seek workers able to take on multiple tasks and roles that cut across traditional occupational categories. With the introduction of new kinds of technologies and work processes, occupational duties and the competencies needed in the workplace are constantly in flux.

To be productive and effective in today's workplace, workers may need skills and knowledge drawn from a variety of traditional disciplines.

This program allows students to design a customized instructional program leading to an Associate of Applied Science Degree in Technical Studies. The individualized program will have a specific occupational focus designed by the student in consultation with an occupational mentor, district faculty, and career advising staff.

The program requires the identification of an occupation advisor who will assist the student in specifying skill competencies and occupational outcomes for a specific occupational area.

Note
Individualized Technical Studies Degree Has Two Objectives:
- Provide flexibility in programming in order to meet the educational needs of individuals based on their particular career goals.
- Emphasize an individual's career goals that cannot be achieved through enrollment in any single instructional program currently available at the college.

As part of the educational process, each student is required to complete a personal program portfolio outlining his or her career objectives and the courses required to meet those objectives. This student portfolio, together with a completed application for admission, becomes part of the review process used by the NWTC Individualized Technical Studies committee to admit the student for a customized technical studies program.

Note
Explore the possibility of Individual Technical Studies in areas such as:

Curriculum

Total credits for the Individualized Technical Studies program will vary with a minimum of 60 credits.

FIRST SEMESTER		CREDITS
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-123	Math w Business Apps	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
10-999-939	Technical Studies-Occupational	39
SEMESTER TOTAL		60
TOTAL CREDITS		60

Childcare Administration
Students who complete the 18-credit Child Care Administration Certificate may wish to combine those classes with other classes in the Early Childhood or Supervision associate degree programs for an Individual Technical Studies-Child Care Administration Degree. Courses can be chosen to create a customized curriculum specific to the needs of the individual, with an emphasis on Administration, Special Needs, Infant/Toddler or other areas.

Entrepreneurship
In today's world, there is increasing desire among people of all ages to explore, develop, start and run their own businesses. But the knowledge, skills and abilities to start and successfully operate these businesses have never required the wearing of so many hats ñ and to wear them well. Though the rewards are great, the risks are equally as great, thereby requiring that today's entrepreneurs be more sophisticated and balanced in their planning and preparation. NWTC has carefully considered the needs of an entrepreneur, and have created four distinct Entrepreneurship Certificate tracks to consider. By pairing these certificates with general studies courses, you can create an Individualized Technical Studies Degree in Entrepreneurship.

For more information about these degrees and other exciting opportunities, please call (920) 498-5421.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 10-838-105, Intro to Reading & Study Skills or 10-831-103, Intro to College Writing w/ a "C" or better OR equivalent)

Individualized Technical Studies-Journeyworker
Program Code 104995 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Individualized Technical Studies-Journeyworker is designed for journeyworkers from various trades who are interested in continuing their education and earning a degree customized to their career interests. Thirty-nine credits are granted toward the degree based upon completion of a Wisconsin Journey Certificate that includes 400 hours or more of instruction. With a college advisor, the journeyworker identifies the knowledge and skills required to achieve specific career goals. Existing NWTC courses become components of the journeyworker's program of study. At a time when the workplace is continuously changing with advancing technology and flexible organizational practices, new and nontraditional skills are required of the successful worker.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent.

(For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• Completion of all recommended activities to address math and reading skills deficiencies.
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are: Reading Comprehension, 55; Sentence Skills, 75; Elementary Algebra, 61. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a Counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

The individualized nature of this program allows students to take advantage of the skills they have acquired in the apprenticeship program, enhance those skills with coursework from an area of interest, and prepare for a wide variety of workplace opportunities.

Curriculum

Upon graduation from the Individualized Technical Studies-Journeyworker program, a student will have completed 60 credits.

FIRST SEMESTER		CREDITS
*10-801-136	English Composition 1	3
10-801-197	Technical Reporting	3
10-804-118	Interm Algebra w Apps	4
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
10-999-939	Technical Studies-Occupational	39
SEMESTER TOTAL		61
TOTAL CREDITS		61

CURRICULUM NOTE
*Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

Note
Advanced standing will be granted for the 39 credits with the completion of the apprenticeship if it includes a minimum of 400 hours of paid related training (day school).

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-809-198 INTRODUCTION TO PSYCHOLOGY ...survey of theoretical foundations of human behavior such as sensation and perception, motivation, emotions, learning, personality, psychological disorders, therapy, stress, and human diversity in personal, social and vocational settings. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 10-838-105, Intro to Reading & Study Skills or 10-831-103, Intro to College Writing w/ a "C" or better OR equivalent)

Instructional Assistant Program Code 105222 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Instructional Assistant Degree is an Associate of Applied Science Degree, which prepares qualified individuals to work directly with students under the supervision of a licensed teacher. The duties include assisting children with math, reading, and writing assignments as well as handling classroom management, supporting students with special needs, clerical and other tasks related to instruction. This program meets Title I and No Child Left Behind paraeducator requirements.

Duties may also include monitoring student activities, assisting with reading or math, correcting papers, tutoring, one-on-one activities and small group facilitation. In addition, instructional assistants work on classroom displays, assist children with computers and media, provide educational and personal hygiene support to meet individual student needs, and supervise various classroom and other school events. Instructional Assistants may be hired to provide instructional services to students from pre-kindergarten through age 21, however, the focus of this program is on preparing graduates to work primarily in elementary and middle level schools.

Program Outcomes

- Support all learning based on knowledge of subject matter.
- Identify developmentally appropriate child/adolescent physical, social/ emotional, intellectual, and language characteristics and their developmental and environmental impact on learning.
- Adapt instruction to meet the diverse needs of all learners.
- Utilize a variety of instructional strategies, media, and technology to foster the development of critical thinking and problem solving.
- Use proactive classroom management techniques to promote a positive class climate, intrinsic motivation, and optimal learning.
- Demonstrate effective written and verbal communication in working collaboratively within the school setting and interactions with students and families.
- Assist in planning and implementing instructional strategies that reflect the learning cycle.
- Utilize informal assessment strategies to collect data for the support of student learning.
- Incorporate the reflective process to promote student learning and professional growth.
- Assume professional responsibility for ethical, moral, and legal policies and procedures.
- Provide for health and safety needs of students.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Demonstrated proficiency in basic skills through a course placement assessment.
- It is necessary to show good health as evidenced by a medical examination within one year prior to beginning practicum classes.
- Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Complete Caregiver Background Check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Employment Potential

A graduate of this program will have the potential for employment as an instructional assistant or educational paraprofessional in schools from the pre-kindergarten through high school level. Instructional Assistants work with children in preschools, elementary schools, middle schools, and high schools. Instructional assistants work with children with special needs.

Most job opportunities in this field coincide with the public school system with regard to workdays, holidays, summers and many positions are part-time.

Graduates Work As: Teacher assistants, instructional assistants, paraeducators, paraprofessionals, specialized aides in reading, math, computers, or special education, and autism therapists.

Typical Activities Include: Preparing classroom displays, using computers, supervising classroom and playground activities, giving tests, monitoring students, reading and telling stories, assisting with small and large group activities, managing student behavior, supporting individual needs of all students, following teacher lesson plans, and supporting individual personal hygiene needs.

The following certificates/technical diplomas may be applied toward this program:
- 905222, Intro to Instructional Assistant Careers Certificate
- 905221, Supporting Children's Learning Certificate
- 905224, Special Education Certificate

Note
- Wisconsin Caregiver Law NWTC is required to comply with the Wisconsin Caregiver Law (2009 WISCONSIN ACT 76). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students

accepted into this program must complete a background check through www.CertifiedBackground.com. A fee is charged for this service. Information regarding this process is provided to students immediately upon acceptance into the program. Students accepted into this program must complete a Background Information Disclosure form disclosing any acts, crimes, or convictions prior to program entry and annually for the remainder of the program. The information provided in the Background Information Disclosure form must be truthful and match any findings on the criminal record check. Students with a criminal history may be denied access to placement at the discretion of the practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee practicum placement or guarantee graduation within typical program timing.
- Completion of a Wisconsin Technical Skills Attainment (TSA) portfolio is required to graduate from this program.

Curriculum

Students following the study plan below will complete the Instructional Assistant associate degree in the number of semesters shown. Courses are offered online, and may be taken in any order as long as prerequisites are met. Two program courses are offered in person each semester. Below is a suggested timeline.

FIRST SEMESTER

		CREDITS
10-522-103	IA: Intro to Educ Practices	3
10-522-104	IA: Technology/Media Rsrces	3
10-801-198	Speech	3
10-809-188	Developmental Psychology	3
10-809-195	Economics	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER

10-522-102	IA: Techniques/Readg/Lang Art	3
10-522-106	IA: Child & Adolescent Devel	3
10-522-107	IA: Overview of Special Ed	3
10-522-111	IA: Guiding & Mnging Behavior	3
**10-522-129	IA: Practicum 1	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		19

THIRD SEMESTER

10-522-101	IA: Teamwork in School Setting	3
10-522-118	IA: Techniques for Math	3
10-801-136	English Composition 1	3
10-809-172	Intro to Diversity Studies	3
	Elective	3
SEMESTER TOTAL		15

FOURTH SEMESTER

10-522-120	IA: Techniques for Science	3
10-522-122	IA: Adv Readg/Language Arts	3
10-522-124	IA: Support Students w Disab	3
**10-522-131	IA: Practicum 2	3
10-522-132	IA: Positive Classrm Mgmt Tech	3
***10-804-107	College Mathematics	3
SEMESTER TOTAL		18
TOTAL CREDITS		67

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

**Required 108 hours in classroom under supervision of K-12 teacher. NWTC Faculty arranges practicum settings for/with students. Students are required to achieve a grade of iCi or higher in the practicum courses to continue in or graduate from this program. Completed criminal record check and medical exam are required prior to starting the practicum courses.

*** This course does not articulate to a four-year college. Seek assistance from counselor for math options.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-522-101 IA: TEAMWORK IN SCHOOL SETTINGS ...working together is paramount in helping all children learn. This introductory course will define the role and responsibilities of the instructional assistant. School and educational policies, ethical and moral responsibilities, group dynamics and Wisconsin tribal rights will also be explored. Emphasis placed on collaborating with a team comprised of diverse members. Service Learning hours will be required for this course.

10-522-102 IA: TECHNIQUES/ READING/LANGUAGE ARTS ...focus on best practices in working with children in their development of reading and language arts as well as the roles of the teacher and the instructional assistant. The student will gain an understanding of how to work with all children and reinforce instruction individually and in groups through questioning, listening and guiding, and scaffolding techniques. Current classroom materials plus enrichment and support activities will be examined and created.

10-522-103 IA: INTRODUCTION TO EDUCATIONAL PRACTICES ...fundamentals of teaching methodologies, history of education, issues in trends, learning styles, instructional cycle, characteristics of diverse classroom, questioning techniques and assessment practices.

10-522-104 IA: TECHNOLOGY/ MEDIA RESOURCES ...develop knowledge and skills in the area of media and computer resources as it relates to the instructional assistant. Students will gain experience creating and using web tools including electronic portfolios.

10-522-106 IA: CHILD & ADOLESCENT DEVELOPMENT...growth and development birth through adolescence. Acquaints the learner with the fundamental tasks of physical, motor, perceptual, cognitive social/ emotional and language development.

10-522-107 IA: OVERVIEW OF SPECIAL EDUCATION ...overview of the Special Education Law; special education classifications and associated causes and characteristics will be explored as well as state and federal qualification criteria will be examined. Societal responses to students with disabilities as well as the impact of a student with special needs on family dynamics will also be covered in this course.

10-522-111 IA: GUIDING & MANAGING BEHAVIOR ...proactive, preventive classroom management, research-based concepts and strategies used to prevent behavior problems, creating positive classroom climate, building student relationships, enhancing motivation, responding to inappropriate behavior will be emphasized.

10-522-118 IA: TECHNIQUES FOR MATH ...techniques for the Instructional Assistant in assisting the classroom teacher in group and individual tutoring activities in math; current practice including manipulatives, problem solving and assessment will be covered within the framework of state and national standards.

10-522-120 IA: TECHNIQUES FOR SCIENCE ...introduction to the content and processes of science. Strategies of teaching science will be studied and practiced and will prepare you in assisting the classroom teacher in group and individual activities in science. Current science processes, strategies, procedures, assessment options and factors affecting science learning will be explored.

10-522-122 IA: ADVANCED READING/ LANGUAGE ARTS ...explore how to integrate reading and writing within the content areas. Students will also gain the knowledge and skills needed to support and encourage children as independent, strategic readers as well as techniqes to support children through the writing process. Children's and Young Adult literature, poetry and personal writing will be explored and integrated throughout this course.

10-522-124 IA: SUPPORT STUDENTS WITH DISABILITIES ...services delivered to students with special education needs, supportive and related services, law, individual educational programs, various instructional formats, and alternative instructional techniques and programs. (Corequisite: 10-522-107, IA: Overview of Special Education)

10-522-129 IA: PRACTICUM 1 ...introduces the student to a diverse classroom setting at an elementary, middle or high school level. The student will observe children and practice techniques under the guidance of a DPI certified teacher. 108 hours in the classroom under supervision of K-12 teacher.

10-522-131 IA: PRACTICUM 2 ...apply the skills learned in previous program courses in a school setting while under the supervision of a DPI certified teacher. Students support children with special education needs and programming. Job search skills will be addressed and a professional portfolio will be completed. 108 hours in the classroom under supervision of K-12 teacher. (Prerequisite: 10-522-129, IA: Practicum 1)

10-522-132 IA: POSITIVE CLASSROOM MANAGEMENT TECHNIQUES ...examines the impact of issues such as divorce, alcoholism, child abuse, youth suicide, stress, violence and gangs on behavior in the classroom. Conflict resolution techniques and de-escalation strategies and with an emphasis on prevention will also be examined.

Landscape Horticulture Program Code 100014 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Landscape Horticulture program prepares a student for employment in the horticulture industry. Instruction will focus on landscape designing, plant installation, maintenance and hardscape skills.

Program Outcomes

- Communicate within the horticulture industry.
- Justify the selection of the appropriate woody plant(s) under the given circumstances for the project at hand.
- Justify the selection of the appropriate herbaceous plant(s) under the given circumstances for the project at hand.
- Execute IPM (Integrated Pest Management).
- Prescribe and execute proper landscape maintenance plans.
- Determine nutritional requirements of turf grasses and ornamentals.
- Analyze soil and its influence on plant life.
- Design and build landscapes.
- Implement a landscape construction design plan.
- Operate a transit.
- Use carpentry hand and power tools.
- Safely operate landscape equipment.
- Operate computer hardware system.
- Develop and deliver a landscape design presentation.
- Use CAD (Computer Aided Design).
- Receive training for Wisconsin Pesticide Certification exam.
- Propagate and grow horticulture plants.
- Use masonry hand and power tools.
- Design and install irrigation equipment.
- Diagnose and treat pest problems on ornamental plants.
- Identify and maintain tropical indoor plants.
- Utilize sustainable practices and biorational controls.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills (whole numbers, fractions, decimals, percents, measurents).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Landscape Horticulture Technician: performs pencil sketching of common ideas, designs landscapes; builds and installs hardscapes and plants; writes cost estimates for labor and materials, performs ground maintenance, safely operates landscape and construction equipment. Has working knowledge of the safe use of pesticides.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Grounds Manager
- Sales Representative
- Garden Center Manager
- Pest Control Specialist
- Garden Center Specialist
- Golf Course Maintenance Assistant
- Lawn Care Equipment Operator
- Turf Technician or Interior Plantscaper

The following certificates/technical diplomas may be applied toward this program:

- 900012, Greenhouse Growers Certificate
- 900015, Plant Healthcare Management Certificate

Curriculum

Students following the study plan below will complete the Landscape Horticulture associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-001-110	Horticulture-Intro	3
10-001-158	Plant-Woody Ornamental	3
10-001-159	Flowers-Herbaceous	3
10-606-112	Computer Apps for Technicians	1
10-606-127	Landscape Dsgn Studio Intro	1
10-801-196	Oral/Interpersonal Comm	3
10-809-197	Contemporary Amer Society	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-001-122	Fundamentals Plant Nutrition	1
10-001-153	Plant and Soil Science	3
10-001-154	Turf Management	3
10-001-180	Landscape Installation Intro	2
10-606-125	Landscape Design Technology	2
10-804-123	Math w Business Apps	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		17

SUMMER SEMESTER		
10-001-151	Landscape/Hort Internship	3
SEMESTER TOTAL		3

THIRD SEMESTER		
10-001-109	Landscape Installation-Adv	2
OR		
10-001-108	Plant Propagation	2
10-001-170	Integrated Pest Management	2
10-001-172	Landscape Maintenance	2
10-001-174	Prin of Landscape Design/Graph	3
10-104-191	Customer Service	3
10-801-136	English Composition 1	3
	Elective	1
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-001-115	Landscaping-Applied	4
10-001-141	Horticultural Operations	2
10-001-184	Landscape Design Studio-Adv	3
OR		
10-001-130	Plant Interior	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		15
TOTAL CREDITS		69

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES

Golf Course Management, 10-001-150
Spanish 1, 10-802-101
Greenhouse Grower I, 10-001-111
Plant Health Care, 10-001-123
Greenhouse Grower II, 10-001-112
Organic Gardening, 10-090-121

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-001-108 PLANT PROPAGATION ...plant propagation and production techniques. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-109 LANDSCAPE INSTALLATION-ADVANCED...builds upon landscape construction methods learned in Introduction to Landscape Installation. Possible projects include mixed material patios, retaining walls, water features, sustainable landscape elements, rain gardens, roof gardens, wooden structures, etc. (Prerequisite: 10-001-180, Landscape Installation-Introduction)

10-001-110 HORTICULTURE-INTRODUCTION ...explore the horticulture industry, plant culture, identification, propagation, physiology, selected aspects of horticulture industry including fruits, vegetables, ornamentals, greenhouse systems, landscape techniques, home gardens, and turf.

10-001-115 LANDSCAPING-APPLIED ...provides the opportunity for the learner to develop the knowledge, skills, processes and understanding of applying the course work learned throughout the two years of the Associate Degree program. (Prerequisites: 10-001-170, Integrated Pest Management: 10-001-172, Landscape Maintenance; 10-001-174, Prin of Landscape Design/Graph)

10-001-122 FUNDAMENTALS OF PLANT NUTRITION...fundamentals of plant nutrition, identification and analysis of the nutritional needs of plants; covers the selection of appropriate materials and application rates & methods. (Prerequisite: 10-001-110, Horticulture-Introduction)

10-001-130 PLANT INTERIOR ...how to identify indoor tropical plants and blooming plants that are used in interior plantscaping. Includes identification, plant varieties, pests, diseases, and cultural requirements. Also designing with houseplants. (Prerequisite: 10-001-110, Horticulture-Introduction)

10-001-141 HORTICULTURAL OPERATIONS ...explore the operations of a horticultural enterprise. The focus will be on business objectives, regulations, estimating, record keeping, equipment and accepted practices. Sustainability, supervision and industry credentialing will also be examined.

10-001-151 LANDSCAPE/ HORTICULTURE INTERNSHIP ...job opportunities in the field, applying scholastic knowledge to practical applications, and cooperation with an employer. (Prerequisites: Accepted to the Landscape Horticulture Program; 10-001-158, Plant-Woody Ornamental; 10-001-159, Flowers-Herbaceous ; 10-001-122, Fundamentals Plant Nutrition; 10-001-153, Plant and Soil Science; 10-001-154, Turf Management; 10-001-180, Landscape Installation Intro)

10-001-153 PLANT AND SOIL SCIENCE ...addresses the unique interactions of healthy plants & soils; examines the physical, chemical, organic & biological characteristics of soils and how they impact the structure & functions of plants. (Prerequisite: 10-001-110, Horticulture Introduction)

10-001-154 NATURAL TURF MANAGEMENT...identification of turf grasses; course will examine natural low-maintenance turf, residential lawns and high intensity applications (i.e., golf courses, athletic fields). (Prerequisite: 10-001-110, Horticulture-Introduction)

10-001-158 PLANT-WOODY ORNAMENTAL ...physiology, culture, identification, and use of primarily temperate woody plant materials appropriate for landscapes in northeastern Wisconsin. (Corequisite: 10-001-110, Horticulture-Introduction)

10-001-159 FLOWERS-HERBACEOUS ...annuals/perennials/roses; using flowers/foliage effectively in the landscape; care of each flower emphasizing selection/tips to best utilize each flower; groundcover/vines included. (Corequisite: 10-001-110, Horticulture-Introduction)

10-001-170 INTEGRATED PEST MANAGEMENT...various methods to combat plant pests in an environmentally responsible manner; using biorational techniques and strategies. (Prerequisite: 10-001-110, Horticulture-Introduction)

10-001-172 LANDSCAPE MAINTENANCE ...identifying problems and cultural challenges in the landscape; pruning techniques, insect/disease problems, weed identification; soil fertility; resolve situations in the field. (Prerequisites: 10-001-110, Horticulture-Introduction; 10-001-153, Plant and Soil Science; 10-001-122, Fundamentals of Plant Nutrition)

10-001-174 PRINCIPLES OF LANDSCAPE DESIGN AND GRAPHICS...residential design methods utilizing outdoor room concepts: function, design principles, and composition in developing a landscape plan; drafting, site analysis, graphics. (Prerequisites: 10-001-110, Horticulture-Introduction; 10-606-127, Landscape Design Studio Introduction)

10-001-180 LANDSCAPE INSTALLATION INTRODUCTION ...investigate techniques used in landscape construction practices. These include the use of specific landscape tools, plan implementation methods, preliminary site survey methods, proper planting, equipment operations & installations of basic landscape features (Prerequisite: 10-606-127, Landscape Design Studio Introduction.)

10-001-184 LANDSCAPE DESIGN STUDIO-ADVANCED ...exploration of design elements through individual practicum; survey of landscape design history, land-use planning, topographic design, structural planning of retaining walls, ornamental ponds, bioretention, lighting theory, sustainable practices and bidding procedures. (Prerequisite: 10-001-174, Principles of Landscape Design and Graphics)

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-606-112 COMPUTER APPLICATIONS FOR TECHNICIANS...basics of a computer system, computer terminology, the Microsoft Windows environment, file management, Microsoft Word and Microsoft Excel.

10-606-125 LANDSCAPE DESIGN TECHNOLOGY ...using computer and computer aided design software as tools for design communication. It is intended to be an introduction to the fundamental components of CAD in landscape design. Property lines, topography, site planning, hardscapes, planting plans, and section view graphics will be covered. (Prerequisite: 10-606-127, Landscape Design Studio; Recommendation: 10-606-112, Computer Apps for Technicians)

10-606-127 LANDSCAPE DESIGN STUDIO INTRODUCTION ...introduction to the techniques of hand drafting and rendering through studio exercises; drafting and sketching techniques include architectural lettering, isometric drawing, section and elevation views, using scales, rendering procedures, etc.

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Leadership Development program provides educational experiences to individuals preparing for, or already engaged in, leadership positions. The program is offered on an accelerated, flexible, part-time or full-time schedule to accommodate working adults.

Program Outcomes

• Demonstrate effective leadership skills.
• Practice ethical leadership.
• Perform in team environments.
• Facilitate effective meetings.
• Value diversity.
• Demonstrate workplace communication skills.
• Understand the financial components of an organization.
• Utilize performance management techniques.
• Apply project management skills.
• Demonstrate professionalism in management of time, stress and assertiveness.
• Advocate for organizational change.
• Apply continuous improvement processes.
• Affect workplace safety positively.
• Apply current legal workplace standards.
• Demonstrate innovative and creative thinking.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized

plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

• It is recommended that a student have a minimum of two years' work experience and basic computer skills in Word, Excel, and PowerPoint prior to entering the Leadership Development program.

Employment Potential

This program is designed to attract persons who are already engaged in, or are preparing for, leadership roles in an organization. A student who is already in a leadership or other management level position will be able to expand his/her level of effective leadership skills.

A student not currently in a first level management role will develop leadership skills and increase the chance of promotion.

Traditionally, a supervisor plans, organizes, directs, and coordinates activities of non-management employees in various occupational settings; trains and evaluates employees under her or his authority; implements policy decisions and work systems established by upper management; and facilitates communication and work flow.

In addition to traditional supervisory skills and practices, todayís leaders must understand system(s), variation, and continuous improvement processes; be facilitators rather than bosses; effectively manage work place diversity; help organizations adapt to change and encourage innovation; display leadership skills; use critical thinking skills; and use communication skills appropriate to a team environment.

Note
• The 13 technical studies courses, beginning with course number 10-196-1xx, are delivered in a variety of formats.
• Some courses have a compressed schedule of seven weeks each. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.
• Various Leadership Development Certificates are available. Refer to the program website for information.
• Program Website: http://leadership-dev.nwtcbit.com/leadership_dev/

Curriculum

Students following the study plan below will complete the Leadership Development associate degree in the number of semesters shown. For alternate study plans, refer to the information in the Related Links area at the right of this page.

GROUP 1		CREDITS
10-196-164	Supervisors-Personal Skills	3
10-196-189	Team Building/Prob Solve	3
10-196-191	Supervision	3
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
TOTAL CREDITS		**19**

GROUP 2		
10-101-106	Accounting-for Non-Accountants	3
10-105-102	Career Planning	2
10-196-134	Legal Issues-Supervisors	3
10-196-193	Human Resource Mgmt	3
10-801-196	Oral/Interpersonal Comm	3
10-809-197	Contemporary Amer Society	3
TOTAL CREDITS		**17**

GROUP 3		
10-105-103	Career Preparation	1
10-196-169	Diversity in the Workplace	3
10-196-188	Project Mgmt Fundamentals	3
10-196-190	Leadership Development	3
10-196-199	Business Ethics	3
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
OR		
10-809-198	Intro to Psychology	3
TOTAL CREDITS		**19**

GROUP 4		
10-101-184	Business Finance/Budgeting	3
**10-196-101	Leadership Dev Career Exp	2
10-196-136	Safety-Workplace	3
10-196-145	Workplace Innovation	3
10-196-192	Managing-Quality	3
TOTAL CREDITS		**14**
TOTAL PROGRAM CREDITS		**69**

CURRICULUM NOTE

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

**It is strongly recommended that 10-196-101, Leadership Development Career Experience, 10-196-101, be taken in the final semester of program courses.

The following certificates/technical diplomas may be applied toward this program:
• 901961, Supervision Certificate
• 901962, Ethical Leadership Certificate
• 901969, Utility Management Certificate
• 901968, Quality Improvement and Innovation Certificate
• 901967, Health Care Leadership Certificate
• 9019610, Health Care Leadership Advanced Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/ BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w/ Business Apps)

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-196-101 LEADERSHIP DEVELOPMENT CAREER EXPERIENCE ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition 1; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

10-196-134 LEGAL ISSUES-SUPERVISORS ...legal practices of recruiting, interviewing, hiring, selection, evaluation/promotion, employee discipline, firing, EEOC and nondiscrimination, employee privacy, workplace harassment, FMLA, ADA and unions.

10-196-136 SAFETY-WORKPLACE ...safety awareness, federal/state/local compliance, inspections, risk analysis, workplace violence, substance abuse, health hazards, first aid, CPR, fire and electrical safety, and emergency preparedness.

10-196-145 WORKPLACE INNOVATION ...use of inventive thinking techniques and innovative methods to improve work processes in multiple workplace environments; research and analyze the use of technology in businesses to promote innovation in the workplace; develop an innovative, entrepreneurial, and intrepreneurial mindset.

10-196-164 SUPERVISORS-PERSONAL SKILLS ...time management and personal planning, emotional intelligence, effective communication, assertiveness and stress management related to the challenges of a supervisor.

10-196-169 DIVERSITY IN THE WORKPLACE ...analyze the effect of perceptions, attitudes, biases, and organization culture on diversity, dealing with barriers, measuring progress, and celebrating success.

10-196-188 PROJECT MANAGEMENT FUNDAMENTALS ...the role of project management, developing a project proposal, demonstration of relevant software, working with project teams, sequencing tasks, charting progress, dealing with variations, budgets and resources, implementation, and assessment.

10-196-189 TEAM BUILDING/ PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-190 LEADERSHIP DEVELOPMENT ...leadership effectiveness and organization requirements, individual and group motivation strategies, vision, mission and goals, ethical behavior, leadership style and adaptation, impacts of power and influence, employee development, coaching, managing change, and conflict resolution. (Prerequisite: 10-801-136, English Composition 1)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-192 MANAGING-QUALITY ...developing a personal philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, managing a quality improvement project, measuring effectiveness, lean thinking, Six Sigma, and systems thinking.

10-196-193 HUMAN RESOURCE MANAGEMENT ...impacts of EEOC, writing job descriptions, recruitment, selection, conducting job interviews, orientation, developing policies and procedures, training, performance, counseling and development, and compensation and benefit strategies.

10-196-199 BUSINESS ETHICS ...ethical points-of-view, morality/ethical theory, utilitarianism, Kantian ethics, justice and the market system, whistle-blowing, trade secrets/conflict of interest, privacy, advertising, product safety, corporate social responsibility, international business.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Machine Tool - CNC Technician program offers students an additional year of hands-on computer controlled machining and advanced programming experience for graduates of the Machine Tool Operation program.

Program Outcomes

- Control multiple axis CNC machines.
- Use efficient production set up techniques.
- Use advanced CNC programming techniques.
- Control optional features of CNC machines.
- Design and construct jigs, fixtures, dies and molds.
- Use precision measuring practices.
- Use EIA/ISO G & M codes for CNC programming.
- Set up and operate milling machines.
- Know and apply Statistical Process Control (SPC).
- Set up and operate computerized electrical discharge machines.
- Set up and operate grinding machines.
- Set up and operate sawing machines.
- Set up and operate drilling machines.
- Complete basic welding processes.
- Program and operate computerized numerical control milling machines.
- Program and operate computerized numerical control lathes.
- Identify fluid power components.
- Know and apply ISO 9000 quality practices.
- Know and apply mathematics.
- Set up and operate engine lathes.
- Interpret working drawings.
- Work from blueprints and sketches.
- Know and apply basic metallurgy.
- Know and apply shop safety practices.
- Understand and apply cutting tool speeds and feeds.
- Perform 2-D CAM operations.
- Program 3-D surface machining operations.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills (whole numbers, fractions, decimals, percents and measurements).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Reading Comprehension: 55; Arithmetic: 65; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

Computer Numerical Control (CNC) Technician/ Programmer Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets; sets up fixturing and tooling; produces and inspects parts; and edits CNC programs on CNC lathes and machining centers.

Jig and Fixture Apprentice/Trainee: lays out, fits, and assembles parts to make and repair cutting tools, jigs, fixtures, gauges, or machinistís hand tools by analyzing specifications.

Machinist Apprentice/Trainee: sets up and operates a variety of machine tools; and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

Manufacturing Engineering Technician: supports production in a CNC machining environment.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Journey Level Machinist
- Pattern Maker
- Mold Maker
- Tool and Die Maker
- CNC Programmer
- Machine Shop Foreperson/Supervisor

Curriculum

Students following the study plan will complete the Machine Tool - CNC Technician technical diploma in the number of semesters shown.

FIRST SEMESTER

		CREDITS
10-420-100	CNC Interface Methods	1
10-804-104	Math 2-Trades	2
*10-890-101	College 101	1
31-420-336	Intro to CNC Milling Operation	1
31-420-337	Intro to G-Code and CAM 1	2
31-420-341	Machine Tool Set-Ups	2
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-421-352	Blueprint Rdg/Sket-Mach 1	2
SEMESTER TOTAL		19

SECOND SEMESTER

31-420-339	Intro to CNC Turning Operation	1
31-420-340	Intro to G-Code & CAM 2	2
31-420-347	Cutting Tool Technology	1
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	2
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-386	Communicating Effectively	3
SEMESTER TOTAL		16

THIRD SEMESTER

31-442-361	Welding-Machine Trades	1
32-420-306	Stamping Die Construction	4
32-420-307	EDM & Waterjet Machining	2
32-420-308	Quality Control Applications	1
32-420-335	CNC Turning Operation	3
32-420-336	CNC Machining Center Oper	3
32-420-337	3D CAM Programming	3
SEMESTER TOTAL		17

FOURTH SEMESTER

32-420-300	Mold Die Construction	4
32-420-301	Fixture and Tool Making	4
32-420-303	Fixture and Tooling Design	2
32-420-310	CNC Techniques-Adv	4
32-420-312	CNC Machine Mechanics	1
32-420-342	Multi-Axis CAM Programming	2
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-100 CNC INTERFACE METHODS ...this course provides the learner the opportunity to develop and learn the computer interface skills needed to operate and program CNC (Computer Numerical Control) machines, through the machines' HMI (Human Machine Interface) and CAM (Computer Aided Manufacturing) system.

31-420-336 INTRO TO CNC MILLING OPERATIONS ...shop safety around CNC milling machines, CNC milling machine controls and preparing basic G-Code milling programs. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 10-804-104, Math 2-Trades)

31-420-337 INTRO TO G-CODE AND CAM 1 ...CNC basics, Cartesian coordinate systems, G-Code programs for milling machines, using a personal computer to create geometry and programs using CAD CAM systems for CNC milling machines. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisites: 10-420-100, CNC Interface Methods; 10-804-104, Math 2-Trades)

31-420-339 INTRO TO CNC TURNING OPERATIONS ...shop safety around CNC turning machines, CNC turning machine controls, preparing basic G-Code lathe programs, set up, and operation of CNC turning machines. (Prerequisites: Accepted in the Machine Tool Operation, CNC or Machine Tool Technics program; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-340 INTRO TO G-CODE & CAM 2 ...computer controlled milling machines, basic programming on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and turning machines. (Prerequisites: Accepted in the Machine Tool Operation, CNC or Machine Tool Technics program; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-341 MACHINE TOOL SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dial offsets, boring bars, and bar feeding. (Prerequisite: Accepted into the Machine Tool Operation or CNC; Corequisites: 10-804-102, Math 2-Trades)

31-420-345 MACHINE SHOP 1 ...shop safety, measuring tools/layout, power saw theory/operation, basic theory, operation of drilling machines, bench work, basic engine lathe operation, basic vertical, horizontal, CNC milling machine, surface grinder. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 10-804-104, Math 2-Trades)

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, power saw operation, drilling machine operation basic/theory and operation of engine lathes, basic theory/operation vertical/horizontal milling machines, CNC milling, lathe operation, surface grinder operations. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisites: 31-420-345, Machine Shop 1; 10-804-104, Math 2-Trades)

31-420-347 CUTTING TOOL TECHNOLOGY ...tool materials, tool geometry, lathe tools, milling cutters, cutting speeds/feeds, drills, reamers, taps, threading tools, carbide inserts, and diamond, ceramic, Cermet and polycrystalline cutting tools. (Prerequisite: Accepted into Machine Tool Operation or CNC)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisites: Accepted into Machine Tool Operation or CNC program; 31-420-346, Machine Shop 2; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-357 MACHINE SHOP 4 ...shop safety, measuring tools, power saw operation, drilling machines, bench work and maintenance, advanced engine lathe operation, advanced vertical horizontal and CNC milling operation, grinding machine operation, and CNC turning centers. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 31-420-356, Machine Shop 3)

31-421-352 BLUEPRINT READING/ SKETCHING-MACHINE 1 ...fundamentals of sketching, orthographic projection, auxiliary views, sectional views, dimensioning, precision and non-precision measurement, and general print reading.

31-421-362 BLUEPRINT READING/ SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

31-442-361 WELDING-MACHINE TRADES ...oxyacetylene, brazing, soldering, cutting and hardsurfacing, beads and types of joints, plasma arc cutting, gas metal arc, tungsten metal arc welding.

32-420-300 MOLD DIE CONSTRUCTION ...squaring plates, boring/milling/turning components, grinding/polishing operations, heat treating, fitting ejector systems, heating/cooling systems, applying fasteners, engraving/stamping, RAM EDM machining, molding machine setup. (Prerequisite: Accepted in the CNC program; completion of Machine Tool Operation program)

32-420-301 FIXTURE AND TOOL MAKING ...performing various machining, heat-treating, and assembly operations necessary to produce a tool or fixture to be used in a typical manufacturing process. (Prerequisites: Accepted in the CNC program; completion of the Machine Tool Operation program; Corequisite: 32-420-303, Fixture and Tooling Design)

32-420-303 FIXTURE AND TOOLING DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process. (Prerequisites: Accepted in the CNC program; completion of the Machine Tool Operation program; Corequisite: 32-420-301, Fixture and Tool Making)

32-420-306 STAMPING DIE CONSTRUCTION ...machine die blocks, punches, punch plates, gages, stops, strippers, die shoes using CNC lathes, CNC mills, CNC wire EDM; assemble components into a working die set; set-up on punch press. (Prerequisite: Accepted in the Machine Tool Operation or CNC program; 31-420-357, Machine Shop 4)

32-420-307 EDM & WATERJET MACHINING ...electrical discharge machining (EDM), high speed machining concepts, rapid setup and quick change over procedures, abrasive waterjet, abrasive flow, chemical machining, laser and plasma, palletizing systems. (Prerequisites: Accepted into CNC; Completion of the Machine Tool Operation program; Corequisites: 32-420-337, 3D CAM Programming; 32-420-306, Stamping Die Construction)

32-420-308 QUALITY CONTROL APPLICATIONS ...ISO 9000 concepts, Statistical Process Control (SPC) theory and applications, coordinate measuring machine setup and applications, surface texture measurement concepts, and applications for geometric dimensioning and tolerancing (GD&T), optical comparator and high amplification techniques. (Prerequisite: Accepted in the Machine Tool Operation or CNC program)

32-420-310 CNC TECHNIQUES-ADV ...Mill 4th and 5th multi-axis programming, parametric programming, 3D surface machining, productivity optimization, lathe live tooling, and c-axis control. (Prerequisites: Accepted into CNC program; 32-420-335, CNC Turning Operation; 32-420-336, CNC Machining Center Oper; Corequisite: 32-420-342, Multi-Axis CAM Programming)

32-420-312 CNC MACHINE MECHANICS ...CNC machine hydraulics, pneumatics, control, and drive systems. (Prerequisite: Accepted in the CNC program or completion of the Machine Tool Operation program)

32-420-335 CNC TURNING OPERATION ...equipment overview, production planning, machine start-up, control panel operations, CNC control tools, operational codes and functions, operation modes and CNC code generation. (Prerequisites: Accepted into Machine Tool Operation or CNC; Completion of the Machine Tool Operation program)

32-420-336 CNC MACHINING CENTER OPERATION ...equipment overview, production planning, machine start-up, control panel operations, CNC control tools, operational codes and functions, operation modes and CNC code generation. (Prerequisite: Accepted in the CNC program or completion of the Machine Tool Operation program)

32-420-337 3D CAM PROGRAMMING ...basic AutoCAD, CNC production planning, advanced 2D programming, 3D surface programming, computer-assisted CNC programming. (Prerequisite: 31-420-349, G-Code & CAM 2)

32-420-342 MULTI-AXIS CAM PROGRAMMING ...CNC process modeling, 4th axis indexing, advanced CNC lathe programming, 4th axis CNC wire EDM programming, and CNC fabrication punch/burner programming applications. (Prerequisites: Accepted in the CNC program; 32-420-337, 3D CAM Programming)

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Machine Tool Operation prepares students to operate machine tools such as engine lathes, milling machines, drill presses, and computer numerical control machines.

Program Outcomes

• Safely set up and operate drill presses.
• Safely set up and operate engine lathes.
• Safely set up and operate horizontal and vertical milling machines.
• Safely set up and operate grinding machines.
• Safely set up, operate, and program computer numerical control milling machines.
• Safely set up, operate, and program computer numerical control turning machines.
• Use semi-precision and precision measuring tools to create parts that meet dimensional specifications shown on part prints.
• Accurately read and interpret blueprints.
• Make mathematical calculations related to machine trades.
• Use a computer-aided manufacturing program to create part profiles and machine code.
• Set up and operate milling machines.
• Set up and operate sawing machines.
• Know and apply basic metallurgy.
• Know and apply shop safety practices.
• Understand and apply cutting tool speeds and feeds.
• Perform 2-D CAM operations.
• Use EIA/ISO G & M codes for CNC programming.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent.

(For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• Students should have mastered basic math skills (whole numbers, fractions, decimals, percents and measurements).
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

CNC Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets, sets up fixturing and tooling, produces and inspects parts, and edits CNC programs on lathes and machine centers.

Machine Set-Up Operator: sets up and operates a variety of machine tools such as radial drill presses, lathes, milling machines, and grinders; machines metal work pieces, tool, or die parts; analyzes specifications; and determines tooling.

Machine Tool Operator: shapes metal to precise dimensions by using machine tools and operates machines such as lathes, milling machines, drill presses, and computer numerical controlled (CNC) machine equipment.

Machinist: analyzes specifications; lays out metal stock; sets up and operates machine tools; and operates a variety of machine tools such as radial drill presses, lathes, milling machines, and grinders to machine a variety of metal work pieces.

Maintenance Machinist: sets up and operates a variety of machine tools and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

With additional education and/or work experience, graduates may find other opportunities for employment.
• All-Around Machinist
• Journeylevel Machinist
• Pattern Maker
• Set-Up Machinist
• Shop Supervisor
• Tool and Die Maker

Note
• Graduates of the Machine Tool Operation program have the option of continuing with the second year of the Machine Tool - CNC Technician program.

Curriculum

Students following the study plan below will complete the Machine Tool technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-420-100	CNC Interface Methods	1
10-804-104	Math 2-Trades	2
*10-890-101	College 101	1
31-420-336	Intro to CNC Milling Operations	1
31-420-337	Intro to G-Code and CAM 1	2
31-420-341	Machine Tool Set-Ups	2
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-421-352	Blueprint Rdg/Sket-Mach 1	2
SEMESTER TOTAL		**19**

SECOND SEMESTER		
31-420-339	Intro to CNC Turning Operation	1
31-420-340	Intro to G-Code & CAM 2	2
31-420-347	Cutting Tool Technology	1
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**16**
TOTAL CREDITS		**35**

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-100 CNC INTERFACE METHODS ...this course provides the learner the opportunity to develop and learn the computer interface skills needed to operate and program CNC (Computer Numerical Control) machines, through the machines' HMI (Human Machine Interface) and CAM (Computer Aided Manufacturing) system.

31-420-336 INTRO TO CNC MILLING OPERATIONS ...shop safety around CNC milling machines, CNC milling machine controls and preparing basic G-Code milling programs. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 10-804-104, Math 2-Trades)

31-420-337 INTRO TO G-CODE AND CAM 1 ...CNC basics, Cartesian coordinate systems, G-Code programs for milling machines, using a personal computer to create geometry and programs using CAD CAM systems for CNC milling machines. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisites: 10-420-100, CNC Interface Methods; 10-804-104, Math 2-Trades)

31-420-339 INTRO TO CNC TURNING OPERATIONS ...shop safety around CNC turning machines, CNC turning machine controls, preparing basic G-Code lathe programs, set up, and operation of CNC turning machines. (Prerequisites: Accepted in the Machine Tool Operation, CNC or Machine Tool Technics program; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-340 INTRO TO G-CODE & CAM 2 ...computer controlled milling machines, basic programming on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and turning machines. (Prerequisites: Accepted in the Machine Tool Operation, CNC or Machine Tool Technics program; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-341 MACHINE TOOL SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dial offsets, boring bars, and bar feeding. (Prerequisite: Accepted into the Machine Tool Operation or CNC; Corequisites: 10-804-102, Math 2-Trades)

31-420-345 MACHINE SHOP 1 ...shop safety, measuring tools/layout, power saw theory/operation, basic theory, operation of drilling machines, bench work, basic engine lathe operation, basic vertical, horizontal, CNC milling machine, surface grinder. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 10-804-104, Math 2-Trades)

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, power saw operation, drilling machine operation basic/theory and operation of engine lathes, basic theory/operation vertical/horizontal milling machines, CNC milling, lathe operation, surface grinder operations. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisites: 31-420-345, Machine Shop 1; 10-804-104, Math 2-Trades)

31-420-347 CUTTING TOOL TECHNOLOGY ...tool materials, tool geometry, lathe tools, milling cutters, cutting speeds/feeds, drills, reamers, taps, threading tools, carbide inserts, and diamond, ceramic, Cermet and polycrystalline cutting tools. (Prerequisite: Accepted into Machine Tool Operation or CNC)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisites: Accepted into Machine Tool Operation or CNC program; 31-420-346, Machine Shop 2; 31-420-336, Intro to CNC Milling Operations; 31-420-337, Intro to G-Code and CAM 1)

31-420-357 MACHINE SHOP 4 ...shop safety, measuring tools, power saw operation, drilling machines, bench work and maintenance, advanced engine lathe operation, advanced vertical horizontal and CNC milling operation, grinding machine operation, and CNC turning centers. (Prerequisite: Accepted into Machine Tool Operation or CNC; Corequisite: 31-420-356, Machine Shop 3)

31-421-352 BLUEPRINT READING/SKETCHING-MACHINE 1 ...fundamentals of sketching, orthographic projection, auxiliary views, sectional views, dimensioning, precision and non-precision measurement, and general print reading.

31-421-362 BLUEPRINT READING/SKETCHING-MACHINE TRADES 2 ...blueprint reading, tolerancing, surface finishes, fits (inch & metric), basic welding symbols, casting, stamping, gearing and CAM drawings, and basic geometric tolerancing and dimensioning. (Prerequisite: 31-421-352, Blueprint Reading Sketching-Machine Trades I)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

Manufacturing Engineering Technology

(with optional Manufacturing Engineering BS from UW-Stout)

Program Code 106233 | Associate Degree

Offered at the Green Bay campus including UW-Stout coursework.

This program is fully eligible for financial aid.

Program Description

The Manufacturing Engineering Technology program prepares students to work in the manufacturing sector assisting engineering and management in the design and development of new products and in the improvement of production processes.

This program will transfer into University of Wisconsin-Stout's Bachelor of Science degree in Manufacturing Engineering offered in Green Bay on the NWTC campus. The third and fourth years of the bachelor's program will be taught by UW-Stout instructors on the NWTC Green Bay campus. To view the third and fourth years, visit the Manufacturing Engineering Technology program page on the NWTC website.

Program Objectives

Graduates will...
• Be employed in the manufacturing industry
• Participate in life-long learning and engage professional growth
• Provide problem-solving skills in a team environment within manufacturing

Program Outcomes

• Apply the principles of mathematics, science and lean principles to solve manufacturing related problems.
• Apply proper engineering principles to design for manufacturability.
• Determine production process improvements by application related experiments.
• Explain the principles of material selection and application.
• Assist in the design of products and manufacturing systems.
• Communicate effectively.
• Function effectively in team or group settings.
• Display attitudes consistent with the profession.
• Utilize modeling software tools in the design of prototypes, products or components for selected applications.
• Apply automation principles along with the use of programmable logic controller techniques for design and control of manufacturing processes.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• One year high school algebra or one year advanced math (Geometry, Algebra II, or Trigonometry) or equivalent passed with a "C" grade or better in each semester.

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Reading Comprehension: 80; Sentence Skills: 75; College Math: 63. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the manufacturing sector as a technologist in Manufacturing Engineering, Industrial Engineering, Productivity Improvement or Continuous Improvement, assisting engineering and management in the design and production of products as efficiently as possible.

Note

• Students who choose to take Physics, Calculus and Chemistry courses at other higher education institutions must be aware of prerequisite requirements and must meet with the Academic Advisor of Manufacturing Engineering Technology prior to course entry.
• Students should have an aptitude for science and mathematics. Students should take as many upper level math and science courses in high school as possible, including algebra, trigonometry, pre-calculus, physics and chemistry.

Students must have an acceptable Academic Skills Assessment College Math score (63 or higher) or equivalent assessment, or have completed or tested out of 10-804-118, Intermediate Algebra w Apps, before taking the following first semester program courses: 10-623-170, Engineering Materials 10-804-197, College Algebra & Trig w Apps and 10-806-135, College Chemistry.

Students must have completed one year of high school Chemistry (with lab component) within the past five years with a "B" or better, OR 10-806-134, General Chemistry, before taking first semester course, 10-806-135, College Chemistry.

• Students will also need to have mastered basic computer skills in Windows, Word and Excel including file creation and management.
• Students must have experience with manual drafting or sketching or need to take 10-614-113, 2D Essentials prior to or concurrent with 10-606-113, CAD.

Curriculum

Manufacturing Engineering Technology is an Associate Degree with the opportunity to complete a UW-Stout Bachelor's Degree at NWTC Green Bay. Students following the study plan below will complete the Manufacturing Engineering Technology associate degree in the number of semesters shown.

FIRST SEMESTER · CREDITS

Code	Title	Credits
10-623-170	Engineering Materials - Intro	3
10-801-136	English Composition 1	3
10-804-197	College Algebra & Trig w Apps	5
10-806-135	College Chemistry	5
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER

Code	Title	Credits
10-606-113	CAD	2
10-620-170	Robotics - Introduction to	1
10-623-171	Polymer Composite Processes	3
10-623-175	Casting and Joining Processes	3
10-801-198	Speech	3
10-804-198	Calculus 1	4
SEMESTER TOTAL		16

SUMMER SEMESTER

Code	Title	Credits
10-623-166	Manufacturing Engr Internship	1
SEMESTER TOTAL		1

THIRD SEMESTER

Code	Title	Credits
10-420-170	Material Removal/Forming	3
10-606-126	Geometric Dimension/Toleran	2
10-623-169	Lean Manufacturing Systems 1	2
10-806-286	NWTC Calculus Based Physics 1	5
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		18

FOURTH SEMESTER

Code	Title	Credits
10-420-168	Computer Aided Manufacturing	3
10-623-167	Engineering Economy	2
10-623-169	Lean Manufacturing Systems 1	2
10-623-173	Engineering Mechanics	3
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-181	Calculus 2	4
SEMESTER TOTAL		17
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program requirements.

The following UW-Stout courses are required for Bachelor of Science Degree completion:

SUMMER AFTER SEMESTER FOUR

Code	Title
MATH-250	Differential Equations/ Linear Alg (3 credit)
MFGE-275	Thermodynamics/Heat Transfer (2 credit)

SEMESTER FIVE

Code	Title
CHEM-341	Chemistry of Materials (4 credit)
MECH-294	Mechanics of Material (3 credit)
PHYS-282	University Physics II (5 credit)

SEMESTER SIX

Code	Title
MFGE-391	Fluid Mechanics (WINTRM)(2 credit)
ELEC-290	Circuits & Devices (4 credit)
STAT-330	Probability & Statics (3 credit)
INMGT-422	Quality Engineering (3 credit)

SUMMER AFTER SEMESTER SIX

Code	Title
GEN ED	Humanities (3 credit)

SEMESTER SEVEN

Code	Title
MFGE-351	Mfg. Process Engineering I (3 credit)
INMGT-435	Facilities/Matl Handling (WINTRM) (2 credit)
MFGE-396	Electrical Control Theory (2 credit)
MFGE-405	Capstone I: Product/ Syst. Design (3 credit)
MFGE-441	Design of Jigs/Fixtures/ Tooling (3 credit)

SUMMER AFTER SEMESTER SEVEN

Code	Title
GEN ED	English Comp 2 (3 credit)
GEN ED	Social Responsibility/Ethical Reasoning (3 credit)

SEMESTER EIGHT

Code	Title
MFGE-440	Design/Simulation Mfg. Systems (3 credit)
MFGE-410	Capstone II: Mfg. Syst. Design (3 credit)
GEN ED	Humanities (Digital Photography) (3 credit)
GEN ED	Contemporary Issues(Cont Am Society) (3 credit)
MFGE-416	Vision Systems (1 credit)
MFGE-52	Mfg. Process Engineering II (3 credit)

For further detail, go to:
http://www.nwtc.edu/academics/ProgTeamSites/
manufacturingengineering/Pages/home.aspx

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-168 COMPUTER AIDED MANUFACTURING ...effects of product mix and demand patterns on manufacturing system design and selection of process control methods. Introductions to quick changeover strategies, reprogrammable automation, numerical control, robotics and other computerized processing techniques. (Prerequisites: 10-623-172, Material Removal/Form; 10-606-126, Geometric Dimensioning/Tolerance)

10-420-170 MATERIAL REMOVAL AND FORMING PROCESSES ...machine tool concepts providing an operational knowledge of machining and metal forming processes. Analysis and application of primary and secondary processing methods for the manufacture of products. Measurement principles and practice applied to inspection and process control. Development of process designs appropriate for product specifications. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-119, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-126 GEOMETRIC DIMENSIONING/TOLERANCING ...review of standard dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. [Prerequisites: 10-606-113, CAD; OR 10-606-157, Solidworks Fund and Drawings OR (10-606-162, Solidworks Fundamentals; and 10-606-163, Solidworks Intermediate; and 10-606-164, Solidworks Assemblies/Draw)]

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ...terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, Solidworks drawing environment and fully dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical, OR 10-614-113, 2D Essentials Sketching-Technical; Prerequisite: Familiarity with Windows file management)

10-620-170 ROBOTICS - INTRODUCTION TO ...introductory study of the application, operation, programming and troubleshooting of industrial robots.

10-623-166 MANUFACTURING ENGINEERING INTERNSHIP ..the application of theory, skills, and techniques in the manufacturing engineering profession. (Prerequisite: instructor approval)

10-623-167 ENGINEERING ECONOMY ...using source and application of funds; cost control, valuation, depreciation, replacement theory and taxation to analyze and assist in making management decisions. (Prerequisites: 10-804-197, College Algebra & Trig w Apps OR 10-804-195, College Algebra w/ Apps AND 10-804-196, Trigonometry w/ Apps; proficiency with advanced functions of Excel strongly recommended)

10-623-169 LEAN MANUFACTURING SYSTEMS 1 ...introduction to production/ operations management and lean manufacturing system design for engineers. Emphasis is given to analysis and design of production systems, facility layout, and globalization. (Prerequisites: 10-804-197, College Algebra & Trig w Apps OR 10-804-195, College Algebra w/Apps AND 10-804-196, Trigonometry w/ Apps)

10-623-171 POLYMER AND COMPOSITE PROCESSES ...polymer materials and properties, material testing, product design and evaluation, processing methods, machine setup and operation. Course requirements include a trip to UW-Stout for lab work. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-623-173 ENGINEERING MECHANICS ...force systems and equilibrium in two and three dimensions, free body diagrams, trusses, frames, friction, kinematic analysis of particle and rigid body translation, rotation, and general plane motion, force-acceleration analysis, work-energy analysis, impulse momentum analysis, impact, damped and undamped vibrations, and forced vibrations. (Prerequisite: 10-806-286, Calculus Based Physics 1)

10-623-175 CASTING AND JOINING PROCESSES ...welding of metals, ceramic and plastic. Brazing and soldering of appropriate metals, setup and operate welding equipment. Thermal effects and destructive testing. Evaluation of adhesives and mechanical fasteners. Welding codes and ASTM standard comparative processing cost. (Prerequisite: 10-623-170, Engineering Materials-Intro)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC system, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-804-181 CALCULUS 2 ...continuation of Calculus I covering integration techniques, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, Infinite series including Maclaurin, Taylor, and Fourier. (Prerequisite: 10-804-198, Calculus I with a "C" or better)

10-806-135 COLLEGE CHEMISTRY ...covers measurement, chemical nomenclature, chemical reactions and stoichiometry, atomic structure, gas laws, thermochemistry, chemical bonding and solution chemistry. (Prerequisite: One year of high school Chemistry with lab component within the past 5 years with a "B" or better OR 10-806-134, General Chemistry with a "C" or better within the past 5 years. Corequisite: 10-804-197, College Algebra and Trig w/Apps, OR 10-804-195, College Algebra w/Apps AND 10-804-196, Trigonometry w/Apps or equivalent.)

Manufacturing Operations Management
Program Code 101965 | Associate Degree

For information, call the Green Bay campus: (920) 498-5444. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Manufacturing Operations Management is a unique associate degree program designed by local industry to meet the needs of the workplace through a combination of supply chain, automation, quality, lean leadership, and supervisory skills. Graduates of this program are prepared to provide leadership in manufacturing industries. Upon graduation, a student will have completed 69 credits.

Program Outcomes
- Demonstrate effective leadership skills.
- Perform in team environments.
- Value diversity.
- Demonstrate workplace communication skills.
- Understand the financial components of an organization.
- Utilize performance management techniques.
- Apply project management skills.
- Apply continuous improvement processes.
- Affect workplace safety positively.
- Monitor customer service, quality, and cost performance.
- Demonstrate knowledge of the application of supply chain management concepts.
- Understand the overall operation and control of machines.
- Apply electrical skills to troubleshoot control and operator panels.
- Apply programming languages to the control of single programmable controllers and industrial networks.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer)

with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

- It is recommended that a student have basic computer skills in Word, Excel, and PowerPoint prior to entering the Manufacturing Operations Management program.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Team Lead

Performance Leader

Reliability Coach

With additional education and/or work experience, graduates may find other opportunities for employment.

- Supervisor of Maintenance, Shop, Production, Department.

Note
- The 11 technical studies courses, beginning with course number 10-196-xxx, are delivered in a variety of formats.
- Some courses have a compressed schedule of seven weeks each. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.

The following certificates/technical diplomas may be applied toward this program:
- 901961, Supervision Certificate
- 901962, Ethical Leadership Certificate
- 901969, Utility Management Certificate

- 901968, Quality Improvement and Innovation Certificate
- 901967, Health Care Leadership Certificate
- 9019610, Health Care Leadership Advanced Certificate

Curriculum
Students following the study plan below will complete the Manufacturing Operations Management associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-196-164	Supervisors-Personal Skills	3
10-196-189	Team Building/Prob Solve	3
10-196-191	Supervision	3
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-105-102	Career Planning	2
10-182-110	Lean Operations Mgmt	3
10-196-134	Legal Issues-Supervisors	3
10-801-196	Oral/Interpersonal Comm	3
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		17

THIRD SEMESTER		
10-105-103	Career Preparation	1
10-196-169	Diversity in the Workplace	3
10-196-190	Leadership Development	3
10-196-199	Business Ethics	3
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-809-195	Economics	3
10-809-198	Intro to Psychology OR	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-101-184	Business Finance/Budgeting	3
10-196-105	Manufacturing Op Career Exper	2
10-196-136	Safety-Workplace	3
10-196-188	Project Mgmt Fundamentals	3
10-196-192	Managing-Quality	3
10-664-102	Automation 3: PLC	1
SEMESTER TOTAL		15
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-101-184 BUSINESS FINANCE/BUDGETING ...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant. (Prerequisite: 10-804-123, Math w/ Business Apps)

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, Six Sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-196-105 MANUFACTURING OPERATIONS MANAGEMENT CAREER EXPERIENCE ...practical hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisite: 10-105-103, Career Preparation)

10-196-134 LEGAL ISSUES-SUPERVISORS ...legal practices of recruiting, interviewing, hiring, selection, evaluation/promotion, employee discipline, firing, EEOC and nondiscrimination, employee privacy, workplace harassment, FMLA, ADA and unions.

10-196-136 SAFETY-WORKPLACE ...safety awareness, federal/state/local compliance, inspections, risk analysis, workplace violence, substance abuse, health hazards, first aid, CPR, fire and electrical safety, and emergency preparedness.

10-196-164 SUPERVISORS-PERSONAL SKILLS ...time management and personal planning, emotional intelligence, effective communication, assertiveness and stress management related to the challenges of a supervisor.

10-196-169 DIVERSITY IN THE WORKPLACE ...analyze the effect of perceptions, attitudes, biases, and organization culture on diversity, dealing with barriers, measuring progress, and celebrating success.

10-196-188 PROJECT MANAGEMENT FUNDAMENTALS ...the role of project management, developing a project proposal, demonstration of relevant software, working with project teams, sequencing tasks, charting progress, dealing with variations, budgets and resources, implementation, and assessment.

10-196-189 TEAM BUILDING/PROBLEM SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, meeting facilitation, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

10-196-190 LEADERSHIP DEVELOPMENT ...leadership effectiveness and organization requirements, individual and group motivation strategies, vision, mission and goals, ethical behavior, leadership style and adaptation, impacts of power and influence, employee development, coaching, managing change, and conflict resolution. (Prerequisite: 10-801-136, English Composition 1)

10-196-191 SUPERVISION ...front-line leadership including teamwork, setting goals, planning, delegation, controlling, communication, motivation, performance management, staffing, training, problem solving, and conflict management.

10-196-192 MANAGING-QUALITY ...developing a personal philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, managing a quality improvement project, measuring effectiveness, lean thinking, Six Sigma, and systems thinking.

10-196-199 BUSINESS ETHICS ...ethical points-of-view, morality/ethical theory, utilitarianism, Kantian ethics, justice and the market system, whistle-blowing, trade secrets/conflict of interest, privacy, advertising, product safety, corporate social responsibility, international business.

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Marine Construction Technical Diploma will prepare learners with broad-based programming with specific skills in marine metals, electrical, mechanical, project management as well as component and materials testing skills. The program will provide a skilled workforce in trades who are able to build, install, operate and maintain integral marine systems.

Program Outcomes

- Perform safety evaluation of the designated worksite, or assigned evolution.
- Use contextual reading skills, using shop forms, safety labels, etc.
- Interpret basic mechanical and/ or electrical blueprints.
- Perform basic welding on carbon steel, and/or stainless steel, and/or aluminum.
- Verify quality control and workmanship metrics of production work.
- Use relevant industry terminology.
- Use materials according to application.
- Use appropriate measuring systems in the industry.
- Communicate with co-workers and supervisors.

Requirements for Program Entry

- Complete Application.
- High School transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish

an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the Shipbuilding and Repair Industry in one of the following marine construction fields.

Marine Welder: employment in Structural Welding, Welder/Fabricator, and Pipe Welder are possible. In these positions the graduate will build and repair components of vessels using basic knowledge of blueprints, metallurgy, and layout while applying the major welding processes used by the industry. With additional education and/or work experience, graduates may find other opportunities for employment, such as Journey Level Welder, Welding Inspector, Welding Supervisor, Journey Level Welder/Fabricator, Pipe Fitter, and Outfitter.

Marine Electrician: employment in installing and servicing conduit, wire, cable, and equipment in new and existing commercial, industrial structures and marine vessels. Additionally, you may find employment in installing, maintaining, and troubleshooting motors, motor controls, lighting, and other electrical systems in an industrial plant or marine vessel. With additional education and/or work experience, graduates may find other opportunities for employment, such as Electrical Engineering Technician, Electrical Supervisor, Journey Level Electrician, and Electrical Maintenance Supervisor.

Note
- Marine Welding students should take 31-421-334, Blueprint Reading I and other Marine Construction students have the option to take either 31-421-334, Blueprint Reading I or 31-421-355, Blueprint Reading/Sketch Industrial.

Curriculum

Students following their selected Electrical, Welding or Composite study plan below will complete the Marine Construction technical diploma in the number of semesters shown.

MARINE ELECTRICITY
FIRST SEMESTER

		CREDITS
10-413-314	DC Circuits	2
10-413-317	Fundamentals of Electricity	2
10-442-102	Intro to Marine Production	3
10-448-210	Intro to Marine-Basic	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
*10-890-101	College 101	1
31-421-335	Blueprint Reading for Welders 1	1
31-421-336	Weld Symbols	1
31-442-301	Material Cutting Applications	1
31-448-364	Marine Electrical Codes	1
31-448-365	Marine Safety	2
31-448-369	Marine Wiring Tech	1
31-804-312	Math-Algebra/Trades	2
SEMESTER TOTAL		20

SECOND SEMESTER

10-182-111	Lean Operations	1
10-196-189	Team Building/Prob Solve	3
10-413-304	Electric Motor Control	2
10-413-328	Motors/Transformers	2
10-413-334	AC Circuits	2
31-413-339	Industrial Controls	3
31-422-310	Metallurgy	2
31-801-386	Communicating Effectively	1
	Elective	1
SEMESTER TOTAL		17

MARINE WELDING
FIRST SEMESTER

10-442-102	Intro to Marine Production	3
10-448-210	Intro to Marine-Basic	1
10-804-101	Math 1-Trades	2
*10-890-101	College 101	1
31-421-335	Blueprint Reading for Welders 1	1
31-421-336	Weld Symbols	1
31-442-301	Material Cutting Applications	1
31-442-337	Metal Fabrication I	1
31-442-338	Metal Fabrication II	1
31-442-349	Metal Fabrication - Rigging	1
31-442-348	Gas Metal Arc Welding 1	1
31-442-356	Gas Metal Arc Welding 2	2
31-442-358	Gas Metal Arc Welding 3	2
31-448-365	Marine Safety	2
SEMESTER TOTAL		20

SECOND SEMESTER

10-182-111	Lean Operations	1
10-196-189	Team Building/Prob Solve	3
31-422-310	Metallurgy	2
31-442-359	Gas Tungsten Arc Welding 1	1
31-442-362	Gas Tungsten Arc Welding 2	2
31-442-363	Gas Tungsten Arc Welding 3	2
31-448-362	Marine Welding	3
31-448-368	Marine Weld Blueprint/VT/Rep	2
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		17

MARINE COMPOSITES
FIRST SEMESTER

10-442-102	Intro to Marine Production	3
10-448-210	Intro to Marine-Basic	1
10-804-101	Math 1-Trades	2
*10-890-101	College 101	1
31-421-335	Blueprint Reading for Welders 1	1
31-421-336	Weld Symbols	1
31-442-301	Material Cutting Applications	1
31-448-363	Intro to Marine Composites	3
31-448-365	Marine Safety	2
31-448-366	Fiber and Matrix Layup	3
31-448-367	Composite Manufacturing Tech	2
SEMESTER TOTAL		20

SECOND SEMESTER

10-182-111	Lean Operations	1
10-196-189	Team Building/Prob Solve	3
31-422-310	Metallurgy	2
31-448-370	Composite Blueprints	1
31-448-371	Quality Control	3
31-448-372	Composite Repairs	3
31-448-373	Pattern & Plug Const Methods	1
31-448-374	Mold Const and Maintenance	2
31-801-386	Communicating Effectively	1
TOTAL CREDITS		17
TOTAL PROGRAM CREDITS		37

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

SUGGESTED ELECTIVES
Automation 3: PLC, 10664102
Power Electricity 1: Motors, 10620161

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-182-111 LEAN OPERATIONS ...understanding of materials and operations management, systems approach, productivity attainment, forecasting, quality management, quality control, six sigma methodologies, process configuration, process analysis and process redesign.

10-413-304 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Corequisite: 10-413-303, Industrial Controls)

10-413-314 DC CIRCUITS ...electron theory, electromotive force sources, voltage, current, resistance, power, Ohm's Law, series-parallel circuits and test equipment. (Corequisite: 31-804-312, Math-Algebra/Trades; 10-413-317, Fundamentals of Electricity)

10-413-317 FUNDAMENTALS OF ELECTRICITY ...atomic structure, electrical quantities, Ohm's Law, magnetism, AC concepts. (Corequisite: 31-804-312, Math-Algebra/Trades)

10-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Corequisite: 10-413-334, AC Circuits)

10-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, diodes and silicon controlled rectifiers. (Corequisites: 10-413-314, DC Circuits, 31-804-312, Math-Algebra/Trades)

10-442-102 INTRO TO MARINE PRODUCTION ...basic tooling, basic blueprint reading, basic layout assembly practices, basic steel welding, basic aluminum welding, basic stainless steel welding.

10-448-210 INTRO TO MARINE-BASIC ...industrial safety, maritime technology, basic HVAC, intro to composites, basic marine propulsion, basic rigging, basic electricity, project management, quality and team building skills.

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

31-413-339 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control (Corequisite: 31-413-345, Industrial Code)

31-421-335 BLUEPRINT READING FOR WELDERS 1 ...course provides the opportunity for the learner to develop the knowledge and understanding of orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, metric conversation and interpretation of fabrications from prints (Prerequisite: Accepted into Welding or Marine Construction program)

31-421-336 WELD SYMBOLS ...course provides the opportunity for the learner to develop the knowledge and understanding of welding symbols AWS and ISO, weld joint nomenclature and welding joint geometry. (Prerequisite: Accepted into Welding or Marine Construction program)

31-421-355 BLUEPRINT READING/ SKETCHING-INDUSTRIAL MECHANIC ...orthographic/ isometric sketching, multiview print reading, dimensioning and tolerancing, section/auxiliary views, weld symbols, piping/ hydraulic prints, and electric motor prints.

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-301 MATERIAL CUTTING APPLICATIONS...visual inspection of weld and cut edges, manual and machine oxy fuel gas cutting, air carbon arc cutting, plasma arc cutting, and mechanical cutting methods. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-337 METAL FABRICATION I (LAYOUT) ...course provides the opportunity for the learner to develop the knowledge, skills, process, and understanding of basic line and angle construction along with flat pattern development for radial line, parallel line, and triangulation (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-338 METAL FABRICATION II (EQUIPMENT) ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of general fabrication equipment, safety and operation used for sawing, bending, shearing, drilling and punching. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-348 GAS METAL ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welding in the flat and horizontal positions, fillet, pipe to plate and groove welds on plain carbon steel. (Corequisite: 31-442-301, Material Cutting Applications)

31-442-349 METAL FABRICATION - RIGGING ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of general fabrication rigging that would be used in a shop and job site application. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-356 GAS METAL ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the vertical and overhead positions, fillet, pipe to plate and groove welds with and without backing on plain carbon steel. (Corequisites: 31-442-301, Material Cutting Applications; 31-442-348, Gas Metal Arc Welding 1)

31-442-358 GAS METAL ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the flat and horizontal positions on T-Joints (1F & 2F) and groove welds with backing (1G & 2G) on plain carbon steel using the spray mode of transfer and on aluminum. (Corequisites: 31-442-301, Material Cutting Applications; 31-442-356, Gas Metal Arc Welding 2)

31-442-359 GAS TUNGSTEN ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of GTAW equipment set-up as well as the basic skills needed to make welds on plain carbon steel. Weld quality will be discussed but this course is only used to understand the basics of the GTAW process. (Prerequisites: Accepted into Welding or Marine Construction program; 31-442-301, Material Cutting Applications)

31-442-362 GAS TUNGSTEN ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of making groove and fillet weld on sheet metal with plain carbon steel, 3XX stainless steel. Weld quality will be emphasized with all lab assignments (Prerequisite: 31-442-301, Material Cutting Applications; Corequisite: 31-442-359, Gas Tungsten Arc Welding 1)

31-442-363 GAS TUNGSTEN ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of GTAW on aluminum as well as multipass groove welds on plain carbon steel. (Prerequisite: 31-442-301, Material Cutting Applications; Corequisite: 31-442-362, Gas Tungsten Arc Welding 2)

31-448-362 MARINE WELDING ...safety, equipment, accessories, inspection and repairs, weld types, joint nomenclature, surface welds, joints, positions and groove welds utilizing Shielded Metal Arc Welding (SMAW) and Flux Core Welding methods.

31-448-363 INTRODUCTION TO MARINE COMPOSITES ...an introduction to marine composite fundamentals of working with resins, fabrics and adhesives. Methods for ensuring quality control in the use of composite industry and ABYC standards stressed.

31-448-364 MARINE ELECTRICAL CODES ...electrical schematic reading, American Boat and Yacht Council (ABYC) and American Bureau of Shipping (ABS) electrical requirements as applied to unique marine use ensuring compliance with United States Coast Guard regulation as well as industry best practices. (Corequisite: 31-804-312, Math Algebra Trades)

31-448-365 MARINE SAFETY ...Marine Safety is an in-depth look at safe working practices with in the marine industry. Working in high places, appropriate PPE, electrical hazards and creating safe work environment.

31-448-366 FIBER AND MATRIX LAYUP ...this course covers the materials, processes and tools used to build a fiberglass part and their role in the open and closed molding laminating processes.

31-448-367 COMPOSITE MANUFACTURING TECHNOLOGY ...this course takes a look at the building process for making quality fiberglass parts and will cover fiberglass part construction in a step-by-step approach from gelcoat to demolding.

31-448-368 MARINE WELDING BLUEPRINT/VT/REPAIR ...weld symbols, weld techniques, ceramic backed welding, marine specific metals and visual testing of welds to determine flaws from failures. (Prerequisite: 31-421-336, Weld Symbols; 31-421-335, Blueprint Reading for Welders1 or 31-421-355, Blueprint Rdg/Sket-Indus)

31-448-369 MARINE WIRING TECHNOLOGY ...marine wiring, codes, processes and procedures. From pulling wires to panel hook ups, stud guns, cable runs, MCTs and grounding specifics on a ship.

31-448-370 COMPOSITE BLUEPRINTS ...composite-specific blueprints, locating information on the blueprint, orientation, conversions, revisions and how they relate to ECNs and FCNs. (Prerequisite: 31-421-336, Weld Symbols; 31-421-335, Blueprint Reading for Welders1 or 31-421-355, Blueprint Rdg/Sket-Indus)

31-448-371 QUALITY CONTROL ...how to check incoming materials to ensure they meet specifications and how to monitor the building process by having quality control inspection during the building process to eliminate warranty problems in the field.

31-448-372 COMPOSITE REPAIRS ...inspection methods to check for defects in a composite laminate using non-destructive methods. Learn proper techniques for making long lasting structural and non-structural repairs.

31-448-373 PATTERN & PLUG CONSTRUCTION METHODS ...various methods for building forms that composite molds can be built from. Students will work with wood and foam learning how to convert a CAD drawing into a finished pattern.

31-448-374 MOLD CONSTRUCTION AND MAINTENANCE ...standard and advanced methods for building long lasting composite molds for both open and closed molding manufacturing processes.

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This program is fully eligible for financial aid.

Program Description

The Marine Engineering Technology Associate Degree will prepare learners with programming specific to marine skills. Marine Engineering Technicians will assist the management team by designing marine systems and components. The program will provide a skilled workforce of engineering technicians who are able to design integral marine systems.

Program Outcomes

- Display proficiency with the use of CAD-based design software/procedures.
- Develop from design drawings the process drawings for the production floor.
- Apply mathematical reasoning .
- Perform safety evaluation of the designated worksite or assigned evolution.
- Analyze stresses caused by forces acting on bodies at rest.
- Analyze forces acting on bodies at rest.
- Interpret basic mechanical and/ or electrical blueprints.
- Verify quality control and workmanship metrics.
- Maintain files on a personal computer.
- Use relevant industry terminology.
- Use materials according to application.
- Use appropriate measuring systems in the industry.
- Function effectively in team or group settings.
- Display attitudes consistent with the profession.
- Communicate with co-workers and supervisors.

Requirements for Program Entry

- Complete Application.

- High School transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- A high school background in mathematics, science and industrial education.
- High school algebra or equivalent.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Reading Comprehensions: 80; Sentence Skills: 75; College Level Math: 63. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.
- Students will be required to take the Accuplacer College Level Math assessment instead of the Algebra assessment. The benchmark grade for Marine Engineering Technology on the College Level Math assessment is 63.
- The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

Employment Potential

A graduate of this program will have the potential for employment in the marine manufacturing sector of building boats, to yachts, to ships as a Marine Engineering Technician, a Mechanical Design Technician, a Mechanical Drafter, or an Electro-Mechanical Designer.

With additional education and/or work experience, graduates may find other opportunities for employment as a Naval Architect, Marine Engineer, Project Engineer or a Lead Designer.

Note
Students must have had two years of high school algebra, one year of high school geometry and an acceptable Academic Skills Assessment College Math score or have completed or tested out of Intermediate Algebra w Apps, course 10-804-118, before taking the following First Semester program course: 10-804-196, Trigonometry w/Apps.

Curriculum

Students following the study plan below will complete the Marine Engineering Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-442-102	Intro to Marine Production	3
10-448-210	Intro to Marine-Basic	1
10-606-113	CAD	2
10-606-157	Solidworks Fund and Drawings	2
10-614-113	2D Essentials	2
10-801-196	Oral/Interpersonal Comm	3
10-804-196	Trigonometry w Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-442-153	Prototype Metal Fabrication	2
10-606-103	2D CAD - Advanced	3
10-606-122	CAD-Fabrication & Assembly	2
10-606-126	Geometric Dimension/Toleran	2
10-804-195	College Algebra w Apps	3
10-806-154	General Physics 1	4
SEMESTER TOTAL		16

THIRD SEMESTER		
10-448-204	Naval Architecture I	3
10-448-206	Ship Constructor	3
10-606-135	Machine Members-Strength	5
10-606-158	Solidworks Advanced	3
10-606-159	Materials Science	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-448-205	Naval Architecture II	3
10-606-141	Design Problems	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-801-136	English Composition 1	3
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		18
TOTAL CREDITS		68

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-442-102 INTRO TO MARINE PRODUCTION ...basic tooling, basic blueprint reading, basic layout assembly practices, basic steel welding, basic aluminum welding, basic stainless steel welding.

10-442-153 PROTOTYPE METAL FABRICATION...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication.

10-448-204 NAVAL ARCHITECTURE I ...lines plan, static stability, hydrostatic curve, determination of areas, volumes, displacement, buoyancy of damaged vessels and stability criteria, launching of ships. (Prerequisites: 10-804-195, College Algebra w/Apps; 10-804-195, Trigonometry w/Apps)

10-448-205 NAVAL ARCHITECTURE II ...continuation of Naval Architecture I covering shipbuilding materials, stresses, loading, propulsion, resistance, speed and power calculation of a vessel. (Prerequisites: 10-448-204, Naval Architecture I; 10-448-206, Ship Constructor)

10-448-206 SHIP CONSTRUCTOR ...ship constructor terminology, software operations, interface basics, creating virtual ship models, revolved features, ship constructor drawing environment and fully dimensioned assembly drawings. (Prerequisite: 10-606-103, 2D CAD ń Advanced)

10-448-210 INTRO TO MARINE-BASIC ...industrial safety, maritime technology, basic HVAC, intro to composites, basic marine propulsion, basic rigging, basic electricity, project management, quality and team building skills.

10-606-103 2D CAD-ADVANCED ...primary and successive auxiliary views; intersections and developments; intersections of planes and dihedral angles; piercing points; angles between lines and planes; revolutions; vectors. (Prerequisite: 10-606-113, CAD)

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-119, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-122 CAD-FABRICATION & ASSEMBLY ...sheet metal drawings as applied to brackets, enclosures & guarding; welding drawings; threads & fasteners; stock components; working drawing documentation. (Prerequisite: 10-606-113, CAD)

10-606-126 GEOMETRIC DIMENSIONING/TOLERANCING ...review of standard dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. [Prerequisites: 10-606-113, CAD; OR 10-606-157, Solidworks Fund and Drawings OR (10-606-162, Solidworks Fundamentals; and 10-606-163, Solidworks Intermediate; and 10-606-164, Solidworks Assemblies/Draw)]

10-606-135 MACHINE MEMBERS-STRENGTH ...force analysis, moments, truss and frame analysis, simple stress, properties of materials, joint design, centroids and moments of inertia, beam design, shafting design, combined stresses, columns. (Prerequisites: 10-806-154, General Physics 1; 10-804-196, Trigonometry w Apps)

10-606-141 DESIGN PROBLEMS ...data gathering, mathematics, document standard practices, project management and teamwork. [Prerequisites: 10-606-126, Geometric Dimensioning/Tol; 10-606-135, Machine Members-Strength; 10-606-103, 2D CAD Adv; (10-606-158, Solidworks Adv OR 10-606-160, Solidworks Sheet Metal AND 10-606-166, Solidworks Loft & Surface)]

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ...terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, Solidworks drawing environment and fully dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical, OR 10-614-113, 2D Essentials Sketching-Technical; Prerequisite: Familiarity with Windows file management)

10-606-158 SOLIDWORKS ADVANCED ...sweeps, equations, configurations, draft, base and derived parts, assemblies, assembly drawings, auxiliary, section and special views, sheet metal, lofting, surfacing, and core and cavity. (Prerequisite: 10-606-157, Solidworks Fund and Drawings OR 10-606-163, Solidworks-Intermediate)

10-606-159 MATERIALS SCIENCE ...engineering materials, material selection, the relationship between material structure and properties, and failure analysis for design improvement. Materials covered include: metallic, polymeric, ceramic, and composite/exotic.

10-614-113 2D ESSENTIALS ... an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Corequisite: 10-620-101, Fluids 2: Basic Hydraulics)

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Marketing prepares students to perform basic marketing functions in industrial, wholesale, retail, and service areas. Students will choose an emphasis in Strategic Planning, Social Media, or Professional Sales. Along with coursework in these areas, students will receive instruction in promotion principles, customer service and marketing presentations.

Program Outcomes

- Recommend a pricing plan.
- Evaluate alternative distribution strategies.
- Develop a product and service mix.
- Generate marketing information for effective decision making.
- Apply continuous improvement strategies to solve marketing problems.
- Assess emerging trends in global trade that impact business and marketing.
- Create a personal professional development plan.
- Manage resources and risks to contribute to profitability of the organization.
- Manage marketing within an enterprise.
- Apply technology to marketing and marketing information systems.
- Apply legal and ethical principles to personal, social, and professional behaviors.
- Develop long-term strategic marketing plans.
- Formulate selling strategies.
- Apply effective leadership skills.
- Design a promotion plan.
- Generate social media strategies to meet marketing and promotional objectives.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Ability to use computer keyboard.
- Students should have mastered basic math skills (whole numbers, fractions, decimals, percents, measurements).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary Program Benchmarks are Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark

scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Professional Sales Representative: evaluates customer needs, determines solutions, creates and delivers sales presentations, overcomes objections and provides excellent customer service that builds long-lasting relationships.

Marketing Assistant: assists department head by performing similar duties; directs and coordinates department activities and functions in commercial, industrial, or service establishments; reviews and analyzes reports, records, and directives; confers with supervisory personnel; and performs administrative tasks such as pricing schedules.

Social Media Coordinator: develops, implements, and coordinates social media initiatives that align with a business or organization's marketing and promotional objectives.

Sales Promotion Coordinator: develops a calendar of promotional events, analyzes media utilization, reviews media rates and cost effectiveness, performs follow-up detail work on promotion implementation, coordinates internal communication, and develops internal promotional support material.

Market Research Assistant: researches market conditions to determine potential sales of products, or service, examines and assists in analyzing data to determine marketing strategy related to marketing trends; prepares reports and graphic illustrations of findings.

Customer Service Representative: initiates follow-up work with current customers, processes and tracks consumer orders, acts as an internal contact for customer inquiries as well as a liaison to field sales organizations, and uses telecommunications skills extensively.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Business Owner
- Customer Service Manager
- Insurance or Financial Services Agent
- Marketing Director
- Promotions Manager
- Real Estate Agent
- Sales Manager
- Marketing Information Manager
- Social Media Manager
- Media Buyer

The following certificates/technical diplomas may be applied toward this program:

- 9010411, Contact Center
- 901049, Customer Service
- 9010412, Professional Sales
- 901047, Promotions & Events Management
- 9010410, Social Media Marketing

Note
The first two semesters for all areas of emphasis are identical. The third and fourth semesters are specific to the respective emphasis area.

Curriculum

Students following the study plan below will complete the Marketing associate degree in the number of semesters shown.

FIRST SEMESTER

Course	Title	CREDITS
10-103-131	Micro: Excel-Intro	1
10-104-101	Selling Principles	3
10-104-110	Marketing Principles	3
10-104-124	Marketing Presentations	1
10-104-182	Personal Brand-Development	2
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER

Course	Title	CREDITS
10-104-107	Marketing Comm-Integrated	3
10-104-176	Social Media Consumer Behavior	3
10-104-191	Customer Service	3
10-801-198	Speech	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		15

STRATEGIC PLANNING EMPHASIS
THIRD SEMESTER

Course	Title	CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-102-150	Business Law & Ethics	3
10-104-119	Social Media Marketing	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER

Course	Title	CREDITS
10-104-120	Marketing Info Mgmt	3
10-104-125	Event Marketing	3
10-104-183	Personal Brand-Portfolio	1
10-104-189	Sales Management	3
10-104-198	Market Research	3
10-104-199	Mktg Internship Practicum	2
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18

SOCIAL MEDIA EMPHASIS
THIRD SEMESTER

Course	Title	CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-104-119	Social Media Marketing	3
10-104-175	Social Media Engagement Strat	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER

Course	Title	CREDITS
10-104-120	Marketing Info Mgmt	3
10-104-125	Event Marketing	3
10-104-172	Social Media Content Mgmt	3
10-104-174	Social Media Analytics	3
10-104-183	Personal Brand-Portfolio	1
10-104-199	Mktg Internship Practicum	2
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18

PROFESSIONAL SALES EMPHASIS
THIRD SEMESTER

Course	Title	CREDITS
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-104-119	Social Media Marketing	3
10-104-154	Consultative Selling Overview	1
10-104-156	Prof Sales: Strategy/Prep	1
10-104-158	Prof Sales:Approach Strategies	1
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER

Course	Title	CREDITS
10-104-120	Marketing Info Mgmt	3
10-104-161	Prof Sales: Cust Needs Assess	1
10-104-163	Prof Sales: Prod Solutions	2
10-104-167	Prof Sales: Closing Techniques	1
10-104-168	Negotiate Customer Resistance	1
10-104-169	Prof Sales: Long Term Partner	1
10-104-183	Personal Brand-Portfolio	1
10-104-189	Sales Management	3
10-104-191	Mktg Internship Practicum	2
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18
TOTAL CREDITS		66

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-102-150 BUSINESS LAW & ETHICS ...common law contracts and sales contracts: formation, interpretation, performance, and discharge; the law of agency; corporations; and introduction to the American legal system: criminal and tort law, and global business issues. (Prerequisite: 10-801-136, English Composition 1)

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-104-107 MARKETING COMMUNICATIONS-INTEGRATED ...creating, coordinating and integrating advertising, public relations and marketing activities for a specific customer or audience. A campaign will be developed and presented.

10-104-110 MARKETING PRINCIPLES ...marketing management, market segmentation, market research, consumer behavior, product decisions and management of distribution, pricing, promotional decisions for strategy planning.

10-104-119 SOCIAL MEDIA MARKETING ...understand the social media revolution. This course will provide students with the practical knowledge and insights needed to successfully plan, implement, manage and measure social media marketing efforts.

10-104-120 MARKETING INFORMATION MANAGEMENT ...opportunity analysis, marketing research processes and data sources, forecasting sales of new and established products, master plan for a marketing strategy, and implementation and control of marketing programs. (Prerequisite: 10-801-136, English Composition 1)

10-104-124 MARKETING PRESENTATIONS ...the use of Microsoft PowerPoint as a tool to create effective, professional-looking marketing presentations.

10-104-125 EVENT MARKETING... planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-154 PROFESSIONAL SALES: EVOLUTION OF CONSULTATIVE SELLING ... an overview of the consultative selling process with focus on delivering value to customers through problem-solving and long-term relationships.

10-104-156 PROFESSIONAL SALES: STRATEGY AND PREPARATION ...prepare to sell with deep knowledge of the product, industry and competition.

10-104-158 PROFESSIONAL SALES: APPROACH STRATEGIES ...students will learn how to create a good first impression and choose the approach strategy that best fits the selling situation.

10-104-161 PROFESSIONAL SALES: CUSTOMER NEEDS ASSESSMENT ...assess customer needs with effective listening techniques and asking the right questions.

10-104-161 PROFESSIONAL SALES: CREATE PRODUCT SOLUTIONS ...develop solutions that meet customer needs and deliver in a smooth and engaging presentation.

10-104-167 PROFESSIONAL SALES: CLOSING TECHNIQUES ...identify, select and apply techniques to effectively close sales.

10-104-168 PROFESSIONAL SALES: NEGOTIATING CUSTOMER RESISTANCE ...create a win-win with strategies to uncover customer resistance and apply techniques to overcome objections.

10-104-169 PROFESSIONAL SALES: BUILDING LONG-TERM PARTNERSHIPS ...utilize post-sale service efforts and communication skills to build long-lasting customer relationships.

10-104-172 SOCIAL MEDIA CONTENT MANAGEMENT ...create and manage web content to engage target audiences that meet marketing objectives.

10-104-174 SOCIAL MEDIA ANALYTICS ...utilize analytical tools to optimize campaign effectiveness to deliver Return on Investment (ROI).

10-104-175 SOCIAL MEDIA ENGAGEMENT STRATEGIES ...utilize social media applications such as Facebook or Twitter to retain/grow customers and expand into new markets.

10-104-176 SOCIAL MEDIA CONSUMER BEHAVIOR ...identify technology trends that impact media usage and its effectiveness.

10-104-182 PERSONAL BRAND-DEVELOPMENT ...learn how personal branding allows you to differentiate yourself from the competition through appearance, personality, and marketing competency.

10-104-183 PERSONAL BRAND-PORTFOLIO ASSESSMENT ...the organization, reporting, and assessment of your personal brand portfolio. The course will involve one-on-one meetings with a marketing instructor who will guide students through the process. (Prerequisites: 10-801-136, English Composition 1; 10-104-182, Personal Brand-Development)

10-104-189 SALES MANAGEMENT ...sales-force organization, staffing, and operations; recruiting and processing applicants; training programs; motivating; compensation; forecasting and budgeting; territories and routing; quotas; evaluating performance; and decision-making through case study analysis. (Prerequisite: 10-801-136, English Composition 1)

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-104-198 MARKET RESEARCH ...identifying problems and formulating problem hypothesis, situation analysis, informal investigation and secondary research, project objectives, primary research, sampling, questionnaires, interviews, processing the written report, and conclusions and data analysis. (Prerequisite: 10-801-136, English Composition 1)

10-104-199 MARKETING INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-809-103 THINKING CRITICALLY & CREATIVELY ...instruction in realistic/practical methods of thinking, including decision making, problem solving, analyzing ideas, troubleshooting, argumentation, persuasion, creativity, setting goals/objectives. Students apply strategies/tools in a variety of situations. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 10-838-105, Intro to Reading & Study Skills or 10-831-103, Intro to College Writing w/ a "C" or better OR equivalent)

Mechanical Design Technology Program Code 106061 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Mechanical Design Technology
prepares learners for employment as
machine designers. Mechanical Design
Technicians assist Product Engineers
by detailing sections of the design.
Detailing includes selecting standard
parts such as bearings, couplings, and
fasteners; sizing machine members; and
preparing necessary documentation for
detail and assembly drawings. Most
of the work is done on a computer.

Program Outcomes
• Draw principal, auxiliary,
  and sectional views.
• Identify the general characteristics
  of metals, polymers, ceramics
  and composites.
• Apply lean manufacturing principles
  to component design.
• Analyze cost of components.
• Participate as a member of a
  manufacturing team.
• Evaluate material options and select
  materials for machine components.
• Use mechanical, architectural,
  metric and civil scales to plot
  scalable prints of drawings.
• Research information on the Internet.
• Maintain files on a personal computer.
• Operate word processing and
  spreadsheet programs.
• Analyze displacement, velocity and
  acceleration of machine members.
• Analyze stresses caused by forces
  acting on bodies at rest.
• Analyze forces acting on bodies at rest.
• Sketch orthographic and isometric views.
• Use catalogs or Internet sites to select
  standard components in machine design.
• Dimension mechanical drawings
  according to conventional ANSI Y14
  standards and GDT standards.
• Draw weldments and sheet metal layouts.
• Create cams using a parametric
  modeler and CNC program.
• Calculate gear train ratios.
• Create basic models using a
  parametric modeler.
• Design simple mechanical devices.
• Draw detail and assembly drawings.
• Prepare electrical/electronic
  documentation for machine control.
• Understand application of
  electromechanical devices and servos.
• Display attitudes consistent
  with the profession.
• Work in an organized manner,
  documenting work performed.
• Use Machinery's Handbook
  as a reference source.

• Apply various manufacturing
  methods and techniques as they
  relate to Mechanical Design.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent.
  (For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.)
• As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program Benchmarks are
  Reading Comprehension: 80; Sentence
  Skills: 75; Elementary Algebra: 61.
  Students not meeting these benchmarks or
  the equivalent will be granted pre-program
  status and will be required to establish
  an individualized academic plan. Upon
  completion of the plan, full program
  status will be granted. Students may have
  the opportunity to enroll in selected
  program core courses while completing
  their individualized plan. However, higher
  test scores will lead to greater success in
  core program courses. To learn more about
  these assessments and program benchmark
  scores, please contact a counselor
  (920) 498-5444 or (888) 385-6982.
• Students will be required to take
  the Accuplacer College Level Math
  assessment instead of the Algebra
  assessment. The benchmark grade for
  Mechanical Design Technology on
  the College Math assessment is 50.
• A high school background in mathematics,
  science and industrial education.
• High school algebra or equivalent.
• Familiar with Microsoft Word
  and File Management.

Employment Potential
A graduate of this program will
have the potential for employment
in the following areas:

Detailer: produces detailed drawings of parts
of machines from supplied information on
CAD, and make drawing changes to comply
with Engineering Change Notices (ECNís)/
Engineering Change Requests (ECRís).

Mechanical Design Technician: applies
knowledge of mechanical engineering
technology to design, develop, and
test new or revised machinery; assists
in component selection and sizing of
machine members; has duties split between
design and drafting and may specialize
in a specific type of machine or product.
Most work is performed on a computer.

Mechanical Drafter: has the principal duty
of preparing working drawings of machinery
and mechanical devices using CAD systems
to draft detail and assembly drawings
indicating dimensions and tolerances,
materials, surface finishes, joining
requirements, and other engineering data.

With additional education and/or work
experience, graduates may find other
opportunities for employment.

Curriculum
Students following the study plan
below will complete the Mechanical
Design Technology associate degree
in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-606-111	Mechanical Design-Exploring	1
10-606-113	CAD	2
10-606-157	SolidWorks Fund and Drawings	2
10-614-113	2D Essentials	2
10-801-196	Oral/Interpersonal Comm	3
10-804-118	Interm Algebra w Apps	4
10-809-199	Psychology Of Human Relations	3
*10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER		
10-442-153	Prototype Metal Fabrication	2
10-606-103	2D CAD - Advanced	2
10-606-122	CAD-Fabrication & Assembly	2
10-606-126	Geometric Dimension/Toleran	2
10-804-196	Trigonometry w Apps	3
10-806-154	General Physics 1	4
SEMESTER TOTAL		16

THIRD SEMESTER		
10-606-135	Machine Members-Strength	5
10-606-139	CAD-Electrical Control	3
10-606-158	SolidWorks Advanced	3
10-606-159	Materials Science	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
SEMESTER TOTAL		17

FOURTH SEMESTER		
10-420-115	CNC-Mechanical Design	3
10-606-141	Design Problems	3
10-606-143	Mechanisms	3
10-801-136	English Composition 1	3
10-809-172	Intro to Diversity Studies	3
	Elective	3
SEMESTER TOTAL		18
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

SUGGESTED ELECTIVES
10-660-104, DC 1: Introduction
10-660-105, DC 2: Circuits
10-660-107, AC 1: Properties

• Mechanical Designer (Product Designer)
• Lead Designer
• Project Engineer
• Technical Sales/Service Representative

The following certificates/technical diplomas
may be applied toward this program:
• 906061, CAD (Computer
  Aided Drafting) Certificate
• 906062, Parametric Modeling Certificate

Note
The following five courses can be taken
in place of 10-606-157, SolidWorks
Fund and Drawings and 10-606-
158; SolidWorks Advanced:
• 10-606-162, SolidWorks Fundamentals;
• 10-606-163, SolidWorks Intermediate;
• 10-606-164, SolidWorks
  Assemblies/Drawings;
• 10-606-165, SolidWorks Sheet Metal; and
• 10-606-167, SolidWorks Loft/Surface.

COURSE DESCRIPTIONS
These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-420-115 CNC-MECHANICAL
DESIGN...2 axis CNC; 3 axis CNC;
importing files; mold making. (Prerequisites:
10-606-113, CAD; 10-606-157,
Solidworks Fund and Drawings OR 10-
606-164, Solidworks-Assemblies/Draw)

10-442-153 PROTOTYPE METAL
FABRICATION...ferrous and non-ferrous
metals, oxyacetylene gas, tungsten arc,
gas metal arc, and metal fabrication.

10-606-103 2D CAD-ADVANCED
...primary and successive auxiliary views;
intersections and developments; intersections
of planes and dihedral angles; piercing points;
angles between lines and planes; revolutions;
vectors. (Prerequisite: 10-606-113, CAD)

10-606-111 MECHANICAL DESIGN
EXPLORING ...philosophy/organization/
procedure of the Mechanical Design
Technology Program, brief overview of
the engineering profession by involvement
in a design project to illustrate basic
concepts/methods of machine design.

10-606-113 CAD (COMPUTER AIDED
DRAFTING) ...computer aided drafting
using AutoCAD software focusing on
template settings; creating and manipulating
layers; basic drawing, editing, and inquiry
commands; blocks and attributes; and
plotting. (Corequisites: 10-607-119,
Intro to Civil Engineering Technology
OR 10-606-119, Technical Sketching
OR 10-614-113, 2D Essentials)

10-606-122 CAD-FABRICATION
& ASSEMBLY ...sheet metal drawings
as applied to brackets, enclosures &
guarding; welding drawings; threads
& fasteners; stock components;
working drawing documentation.
(Prerequisite: 10-606-113, CAD)

10-606-126 GEOMETRIC
DIMENSIONING/TOLERANCING
...review of standard dimensioning, datums,
material condition symbols, tolerances of form
and profile, tolerances of orientation and run
out, location tolerances and virtual condition.
[Prerequisites: 10-606-113, CAD; OR 10-
606-157, Solidworks Fund and Drawings OR
(10-606-162, Solidworks Fundamentals; and
10-606-163, Solidworks Intermediate; and
10-606-164, Solidworks Assemblies/Draw)]

10-606-135 MACHINE MEMBERS-
STRENGTH ...force analysis, moments,
truss and frame analysis, simple stress,
properties of materials, joint design, centroids
and moments of inertia, beam design,
shafting design, combined stresses, columns.
(Prerequisites: 10-806-154, General Physics
1; 10-804-196, Trigonometry w Apps)

10-606-139 CAD-ELECTRICAL
CONTROL ...draw block and flow
diagrams, logic diagrams; introduction to
programmable control; fundamentals of
electronics; motors and control circuits;
sheet metal chassis and panel drawings.
(Prerequisite: 10-606-113, CAD)

10-606-141 DESIGN PROBLEMS ...data
gathering, mathematics, document standard
practices, project management and teamwork.
[Prerequisites: 10-606-126, Geometric
Dimensioning/Tol; 10-606-135, Machine
Members-Strength; 10-606-103, 2D CAD
Adv; (10-606-158, Solidworks Adv OR
10-606-160, Solidworks Sheet Metal AND
10-606-166, Solidworks Loft & Surface)]

10-606-143 MECHANISMS ...study of
motion, vector equations and sense notation,
basic motion concepts, kinematic drawing
and displacement, velocities in mechanisms,
accelerations in mechanisms, CAM motions,
and gear trains. (Prerequisites: 10-806-154,
General Physics 1; 10-606-113, CAD;
10-804-196, Trigonometry w Apps)

10-606-157 SOLIDWORKS
FUNDAMENTALS AND DRAWINGS
...terminology, software operation and
interface basics, creating basic models,
creating casting and forging models, revolved
features, Solidworks drawing environment
and fully dimensioned orthographic
drawings. (Corequisite: 10-606-119,
Sketching-Technical, OR 10-614-113, 2D
Essentials Sketching-Technical; Prerequisite:
Familiarity with Windows file management)

10-606-158 SOLIDWORKS ADVANCED
...sweeps, equations, configurations, draft,
base and derived parts, assemblies, assembly
drawings, auxiliary, section and special
views, sheet metal, lofting, surfacing, and
core and cavity. (Prerequisite: 10-606-
157, Solidworks Fund and Drawings OR
10-606-163, Solidworks-Intermediate)

10-606-159 MATERIALS SCIENCE
...engineering materials, material selection,
the relationship between material structure
and properties, and failure analysis
for design improvement. Materials
covered include: metallic, polymeric,
ceramic, and composite/exotic.

10-614-113 2D ESSENTIALS ... an
introduction to technical communication,
annotation, geometric construction,
model, orthographic and pictorial, section
and auxiliary views and dimensioning.

10-620-100 FLUIDS 1: BASIC
PNEUMATICS ...what fluid power is,
differentiate between hydraulics and
pneumatics, implement basic pneumatic
circuits, utilize schematics, apply Pascal's Law,
define properties of fluids, implement airflow
control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC
HYDRAULICS ...hydraulic pumps, basic
hydraulics actuator circuits, hydraulic
schematics, apply Pascal's Law, summarize
the effects of fluids friction, define properties
of hydraulic energy, design hydraulic circuits
with directional control valves. (Corequisite:
10-620-100, Fluids 1: Basic Pneumatics)

10-620-165 FLUIDS 3: INTERMEDIATE
HYDRAULICS ...design of cylinder
actuating circuits with pressure-
compensated flow control valves, how
to control pressure, pilot-operated check
valve applications, accumulator operation
and application, hydraulic motor types
and applications. (Corequisite: 10-620-
101, Fluids 2: Basic Hydraulics)

Mechanical Systems   Program Code 314755 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Provides students with the introductory
skills necessary to begin a career in the
mechanical construction field. Students
will acquire the entry-level skills
(alignment, rigging, bearings, plumbing
and power transmission) necessary to
become a successful technician. Credits
from this program will transfer to the
Construction Technology associate degree.

Program Outcomes

• Perform technical calculations and
  produce drawings for mechanical,
  electrical and plumbing systems.

• Display a positive attitude
  toward the profession.

• Interpret the elements of mechanics.

• Use measuring devices.

• Use hand, stationary, and
  portable power tools.

• Prepare mounting bases for
  machine installation.

• Identify and use threaded fasteners and
  various locking and holding devices.

• Identify types of structural steel shapes.

• Apply safety requirements
  to rigging an object.

• Classify valves used in a piping system.

• Describe the difference between
  machine, carbon and alloy steels.

• Identify and maintain types of bearings.

• Apply lubricants.

• Demonstrate parallel shaft alignment.

• Maintain chain drive component systems.

• Identify types of gears.

• Identify types of couplings.

• Replace and test electrical motors.

• Identify pipe systems, demonstrate correct
  pipe assembly and installation procedures.

• Maintain and repair hydraulic systems.

• Understand basic plumbing.

• Understand basic HVAC.

Requirements for Program Entry

• Completed application.

• High school transcript or equivalent.
  For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.

• As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program Benchmarks are
  Arithmetic: 34; Reading Comprehension:
  55; Sentence Skills: 60. Students not
  meeting these benchmarks or the
  equivalent will be required to establish an
  individualized academic plan. Students may
  have the opportunity to enroll in selected
  program core courses while completing
  their individualized plan. Upon completion
  of the plan, students will be eligible for
  all program courses. However, higher test
  scores will lead to greater success in core
  program courses. To learn more about
  these assessments and program benchmark
  scores, please contact a counselor at
  (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will
have the potential for employment
in the following areas:

Plumber's Helper: will assist plumber
in installing and maintaining water/
plumbing systems in residential
and industrial applications.

Industrial Mechanic: prepares students to
evaluate machine performance, identify
trouble areas, and repair systems.

General Laborer: performs basic
yet important physical work tasks
at building construction sites.

With additional education and/or work
experience, graduates may find other
opportunities for employment.

• Plumber

• Millwright

• HVAC/R Technician

Completers will be able to apply credits
toward the following programs:

• 10-475-2, Construction
  Technology associate degree

Curriculum

Students following the study plan
below will complete the Mechanical
Systems technical diploma in the
number of semesters shown.

FIRST SEMESTER		CREDITS
10-442-162	Material Cutting Applications	1
10-442-161	Gas Metal Arc Welding	1
10-449-112	OSHA 30	1
10-462-102	Fabrication and Layout	2
10-462-104	Equipment Installation	2
10-462-105	Piping and Water Systems	2
10-462-106	HVAC Basics	2
10-462-109	Pumps & Compressors	1
10-462-111	Blueprint Reading	1
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-105	Rigging Systems 1	1
*10-890-101	College 101	1
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-413-112	Electricity-Basic	2
10-462-100	Mechanical Power Transmission	2
10-462-101	Bearings	2
10-462-103	Couplings and Alignment	2
10-462-107	Input/Output Devices	1
10-462-108	Motor Control Circuits	1
10-462-110	Preventive Maintenance	2
10-620-101	Fluids 2: Basic Hydraulics	1
10-804-101	Math 1-Trades	2
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**16**
TOTAL CREDITS		**33**

CURRICULUM NOTE
*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

Note

• A "C" or better in BOTH 31-801-385,
  Communicating-Writing and 31-801-386,
  Communicating Effectively will satisfy
  the Construction Technology Associate
  Degree requirement for 10-801-196,
  Oral/Interpersonal Communication.

• A "C" or better in 10-804-101, Math
  1-Trades will satisfy the prerequisite
  to enroll in the Construction
  Technology Associate Degree course
  10-804-107, College Mathematics.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-413-112 ELECTRICITY-BASIC ...this
course introduces the fundamental concepts
of electricity and electron flow. Emphasis
is placed on Ohmís law, magnetism as
it relates to electricity, DC/AC circuits,
electrical components, operations of test
equipment, and electrical safety precautions.

10-442-161 GAS METAL ARC WELDING
...course provides the opportunity for the
learner to develop the knowledge, skills,
process and understanding of welding
in the flat and horizontal positions,
fillet, pipe to plate and groove welds on
plain carbon steel. (Corequisite: 31-442-
301, Material Cutting Applications)

10-442-162 MATERIAL CUTTING
APPLICATIONS...visual inspection of weld
and cut edges, manual and machine oxy fuel
gas cutting, air carbon arc cutting, plasma arc
cutting, and mechanical cutting methods.

10-449-112 OSHA 30 ...addresses OSHA
29CFR1926 rules and is approved by
OSHA for construction workers, foremen,
job supervisors, and anyone involved in
construction trades. Successful participants
receive 30-hour card from OSHA.

10-462-100 MECHANICAL POWER
TRANSMISSION ...students will learn
how power moves through machines
to accomplish the necessary tasks.
(Corequisites: 10-462-101, Bearings;
10-462-103, Couplings & Alignment;
10-462-110, Preventive Maintenance)

10-462-101 BEARINGS ...students will
examine bearing types and applications
and compare equipment bearings.
Students will also develop skills related
to bearing inspection, selection,
removal, mounting, lubricating, and
diagnosing failure. (Corequisite: 10-
462-110, Preventive Maintenance)

10-462-102 FABRICATION AND LAYOUT
...course compares types of sheet metal,
tools and uses. Students will develop skills
related to the fabrication and erection of
steel products. Students will work from
drawing through layout and alignment
and demonstrate the safe and proper use of
any and all necessary tools and equipment.
(Corequisites: 10-462-111, Blueprint Reading;
10-462-104, Equipment Installation)

10-462-103 COUPLINGS AND
ALIGNMENT ...course compares
different coupling types and examines
common misalignment problems. Students
will develop skills related to inspecting,
troubleshooting and preparing couplings
for removal and installation. (Corequisite:
10-462-110, Preventive Maintenance)

10-462-104 EQUIPMENT
INSTALLATION ...students will layout
equipment installations, plan for moving
equipment and set and level equipment.
(Corequisites: 10-462-111, Blueprint
Reading; 10-462-102, Fabrication &
Layout; 10-462-105, Rigging Systems)

10-462-105 PIPING AND WATER
SYSTEMS ...students will analyze flow
characteristics in piping systems, relate
pipe sizing to requirements and apply
the correct piping to related situations.

10-462-106 HVAC BASICS ...heating,
ventilation and air conditioning
technology provides students with the
basics to control air flow in respect
to heating and cooling structures.

10-462-107 INPUT/OUTPUT DEVICES
...this course examines the devices used
in control circuits. Students will identify
pushbuttons, rotary switches, limit
switches, proximity switches, photoelectric
switches, relays, motor starters, and
annunciators. Emphasis will be placed on
proper installation and troubleshooting.
(Corequisites: 10-413-112, Basic Electricity;
10-462-108, Motor Control Circuits)

10-462-108 MOTOR CONTROL
CIRCUITS ...this course presents the
students with common designs of motor
control circuits. Students will design
multiple circuits that will start, control
the speed, reverse, brake, and stop motors.
(Corequisites: 10-413-112, Basic Electricity;
10-462-107, Input/Output Devices)

10-462-109 PUMPS & COMPRESSORS
...this course compares different pump types
and their applications. Students will complete
a field inspection of pumps and learn how to
troubleshoot, remove, overhaul, install and
perform preventative maintenance on pumps.

10-462-110 PREVENTIVE
MAINTENANCE ...this course examines
both preventive and predictive maintenance
concepts as they apply to mechanical work
processes and machine maintenance. Students
will develop skills related to assessing machine
conditions and equipment breakdowns
using correct troubleshooting procedures.
(Corequisites: 10-462-101, Bearings; 10-
462-103, Couplings & Alignment; 10-462-
100, Mechanical Power Transmission)

10-462-111 BLUEPRINT READING
...this course explores all elements of
engineering and manufacturing technology
print reading from sketching methods
and measurement techniques to reading
specialty prints. Students develop skills in
print reading, visual perception, technical
communication, and problem solving. It
includes the fundamentals of orthographic
projection, dimension techniques, welding
and electrical symbols, and section views.

10-620-100 FLUIDS 1: BASIC
PNEUMATICS ...what fluid power is,
differentiate between hydraulics and
pneumatics, implement basic pneumatic
circuits, utilize schematics, apply Pascal's Law,
define properties of fluids, implement airflow
control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC
HYDRAULICS ...hydraulic pumps, basic
hydraulics actuator circuits, hydraulic
schematics, apply Pascal's Law, summarize
the effects of fluids friction, define properties
of hydraulic energy, design hydraulic circuits
with directional control valves. (Corequisite:
10-620-100, Fluids 1: Basic Pneumatics)

10-620-105 RIGGING SYSTEMS 1
...the basic skills of rigging, employment
of hoists, slings, lifts, wire rope, and
chain slings as part of rigging system.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Medical Assistant program prepares individuals to be competent entry-level medical assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. The Medical Assistant program prepares individuals to assist physicians in their offices or other medical settings. Medical assistants perform a wide range of duties. The medical assistant is responsible for medical and surgical asepsis, taking vital signs, assisting the physician with examinations and surgery, administering ECGs and administering medications. The business/administrative duties include patient reception, appointment making, record keeping, filing, bookkeeping, insurance handling, typing medical correspondence and transcription and microcomputer applications. Laboratory functions include specimen collection, performance of basic laboratory tests and microscopic work. Graduates find jobs as medical assistants, secretaries, medical laboratory assistants, phlebotomists, receptionists, medical insurance clerks and electrocardiogram technicians.

Program Outcomes

- Perform medical office administrative functions.
- Provide patient care in accordance with regulations, policies, laws, and patient rights.
- Perform medical laboratory procedures.
- Demonstrate professionalism in a health care setting.
- Demonstrate safety and emergency practices in a health care setting.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Medical Assistant: prepares a patient for examination or treatment, takes vital signs, performs simple lab tests, performs electrocardiograms, performs administrative functions, and assists the physician as needed within clinical procedures. Upon successful completion of the AAMA certification exam, Certified Medical Assistant status is obtained.

Medical Insurance Clerk: processes insurance claims on a computer.

EKG Technician: operates and maintains electrocardiographic machines, records the heart's electrical activity, and provides data for diagnosis and treatment of heart ailments by physicians.

Medical Laboratory Assistant: performs simple laboratory procedures and venipunctures to collect blood specimens.

Medical Records Clerk: handles all patient medical records in areas such as progress notes and pulls records of patients on a daily basis.

Medical Office Assistant: performs a variety of duties related to bookkeeping, typing, filing, record keeping, customer relations, telephoning, general correspondence, appointments, and patient accounts.

Phlebotomist: obtains blood specimens by venipuncture and capillary puncture.

Receptionist: greets patients, schedules appointments, and answers telephone.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Medical Laboratory Technician
- Medical Office Manager
- Medical Transcriptionist

Clinical Experience

Students will have on-the-job experience in area clinics during a five-week (minimum of 200 hours), unpaid, full-time practicum during the final semester of the program. Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals

Accreditation

The Medical Assistant program at NWTC is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org), upon the recommendation of the Medical Assisting Education Review Board (MAERB).

Commission on Accreditation of
Allied Health Education Programs
1361 Park Street
Clearwater, FL 33756
727/210-2350
www.caahep.org

Board/Certification Examinations

- Graduates are eligible to take the CMA (AAMA) examination.
- Felons are not eligible for the AAMA Certification Examination unless the Certifying Board grants a waiver based on one or more of the mitigating circumstances listed in the Disciplinary Standards. CMAs who are currently employed or seeking employment may not use the CMA (AAMA) credential unless their CMA is current.

Flexible Learning Option

A part-time on-line and weekend track is available. This option is scheduled over a four-semester period, including one summer. For more information, contact an Academic Advisor at 920-498-5444 to schedule an appointment.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Admission Assessment or equivalent or ACT assessment taken within the last

Curriculum

Students following the study plan below will complete the Medical Assistant technical diploma in the number of semesters shown. For alternate study plans, refer to the information in the Related Links area at the right of this page.

FIRST SEMESTER		CREDITS
**10-501-101	Medical Terminology	3
**10-501-104	Healthcare Customer Serv.	2
**10-501-107	Intro to Health Care Computing	2
*10-890-101	College 101	1
**31-509-301	Medical Asst Admin Procedures	2
**31-509-302	Human Body in Health & Disease	3
**31-509-303	Medical Asst Lab Procedures 1	2
**31-509-304	Medical Asst Clin Procedures 1	4
SEMESTER TOTAL		19

SECOND SEMESTER		
**31-509-305	Med Asst Lab Procedures 2	2
**31-509-306	Med Asst Clin Procedures 2	3
**31-509-307	Med Office Insurance & Finance	2
**31-509-308	Pharm for Allied Health	2
**31-509-309	Medical Law, Ethics & Profess	2
**31-509-310	Medical Assistant Practicum	3
SEMESTER TOTAL		14
TOTAL CREDITS		33

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirements for graduation. Consequently, it is not part of the program credit requirements.

**No final grade lower than "C" is acceptable in any course marked with an asterisk. A student may repeat that particular course to achieve a "C" or better final grade in order to continue in or graduate from this program.

three years. For a list of equivalents, please contact an advisor at (920) 498-5444 or (888) 385-6982.

- Typing proficiency of 25-words per minute (mandatory preadmission typing test to be taken at NWTC Assessment Center).

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 34; Reading Comprehension, 55: Sentence Skills, 60. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory orientation.
- Submit required immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Students will be required to show proof of an annual flu vaccine.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Complete an American Heart Association Heart Saver First Aid course.

The following certificates/technical diplomas may be applied toward this program:
- 905012, Health Care Customer Service Representative Certificate

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COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-509-301 MEDICAL ASSISTANT ADMINISTRATIVE PROCEDURES...introduces medical assistant students to office management, business administration and the electronic medical record (EMR) in the medical office. Students learn to schedule appointments, perform filing, record keeping, telephone and reception duties and communicate effectively with patients and other medical office staff, and keep an inventory of supplies. (Prerequisite: Accepted into Medical Assistant program or shared LTC Ophthalmic Medical Assistant program; Corequisites: 10-501-107, Intro to Healthcare Computing or any other computer course)

31-509-302 HUMAN BODY IN HEALTH & DISEASE ...focuses on diseases that are frequently first diagnosed and treated in the medical office setting. Students learn to recognize human body anatomy and the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases. (Prerequisite/Corequisite: 10-501-101, Medical Terminology)

31-509-303 MEDICAL ASSISTANT LABORATORY PROCEDURES 1... introduces medical assistant students to laboratory procedures commonly performed by medical assistants in a medical office setting. Students perform CLIA waived routine laboratory procedures commonly performed in the ambulatory care setting. Students follow laboratory safety requirements and federal regulations while performing specimen collection and processing, microbiology and urinalysis testing. (Prerequisite: Accepted into Medical Assistant Program; Pre/Corequisites: 10-501-101, Medical Terminology, 10-501-107, Intro to Healthcare Computing; 31-509-302, Human Body in Health/Disease; 31-509-301, MA Administrative Procedures; 31-509-304 Medical Assist Clin Procedures 1)

31-509-304 MEDICAL ASSISTANT CLINICAL PROCEDURES 1...introduces medical assistant students to the clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams in the ambulatory care setting. (Prerequisite: Accepted into Medical Assistant Program; Pre/Corequisites: 10-501-101, Medical Terminology; 10-501-107, Intro to Healthcare Computing; 31-509-301, MA Administrative Procedures; 31-509-302, Human Body in Health and Disease; 31-509-303, Medical Asst Lab Procedures 1)

31-509-305 MEDICAL ASSISTANT LABORATORY PROCEDURES 2... prepares students to perform phlebotomy and CLIA waived hematology, chemistry, immunology, and laboratory procedures commonly performed by medical assistants in the ambulatory care setting. (Prerequisites: 31-509-303 Medical Assistant Laboratory Procedures; 10-501-101 Medical Terminology; 10-501-107 Intro to Health Care Computing; 31-509-304 Medical Asst Clin Procedures 1; 31-509-301 Medical Asst Admin Procedures; 31-509-302 Human Body in Health & Disease; Pre/Corequisites: 31-509-306 Med Asst Clin Proced 2; 31-509-307 Med Office Insurance & Finance; 31-509-309 Medical Law, Ethics & Profess; 31-509-310 Medical Assistant Practicum)

31-509-306 MEDICAL ASSISTANT CLINICAL PROCEDURES 2 ...prepares medical assistant students to perform patient care skills in the medical office setting. Students perform clinical procedures including administering medications, performing an electrocardiogram, assisting with respiratory testing, educating patients/community, assisting with emergency preparedness in an ambulatory care setting. (Prerequisites: 31-509-301 Medical Asst Admin Procedures; 31-509-304 Medical Asst Lab Procedures 1; 31-509-303 Medical Asst Lab Procedures 1; 31-509-302 Human Body in Health & Disease; 10-501-101 Medical Terminology; 10-501-107 Intro to Health Care Computing; Pre/Corequisites: 31-509-305 Med Asst Lab Procedures 2; 31-509-307 Med Office Insurance & Finance; 31-509-308 Pharm for Allied Health; 31-509-309 Medical Law, Ethics & Profess; 31-509-310 Medical Assistant Practicum)

31-509-307 MEDICAL OFFICE INSURANCE & FINANCE ...introduces medical assistant students to health insurance and finance in the medical office. Students perform bookkeeping procedures, apply managed care guidelines, and complete insurance claim forms. Students use medical coding and managed care terminology to perform insurance-related duties. (Prerequisites: 31-509-301, Medical Assistant Administrative Procedures; 31-509-302 Human Body in Health & Disease; 10-501-101, Medical Terminology; 10-501-107 Intro to Healthcare Computing (or any other computer course); Corequisites: 31-509-305 Medical Assistant Lab Procedures 2; 31-509-306, Medical Assistant Clinical Procedures 2; 31-509-308 Pharm for Allied Health)

31-509-308 PHARM FOR ALLIED HEALTH ...introduces students to classifying medications into correct drug categories and applying basic pharmacology principles. Students apply basic pharmacodynamics to identifying common medications, medication preparation, and administration of medications used by the major body systems. (Corequisites: 10-501-101, Medical Terminology; 31-509-302, Human Body in Health/Disease)

31-509-309 MEDICAL LAW ETHICS & PROFESSIONALISM...prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform quality improvement procedures, examine legal and bioethical issues, and demonstrate awareness of diversity.

31-509-310 MEDICAL ASSISTANT PRACTICUM ...requires medical assistant students to integrate and apply knowledge and skills from all previous medical assistant courses in actual ambulatory health care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors to effectively transition to the role of a medical assistant. This is a supervised, unpaid, clinical experience. CAAHEP required practicum. (Prerequisite: Successful completion of all Medical Assistant courses.)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

At career entry, the Medical Laboratory Technician will be able to perform routine medical laboratory tests. Communication skills will extend to frequent interactions with members of the healthcare team, external relations, customer service and patient education. The level of analysis ranges from waived and point of care testing to complex testing encompassing all major areas of the medical laboratory. The Medical Laboratory Technician will have diverse functions in areas of preanalytical, analytical, post-analytical processes. The Medical Laboratory Technician will have responsibilities for information processing, training, and quality control monitoring wherever medical laboratory testing is performed.

Program Outcomes

- Apply modern clinical methodologies including problem solving and trouble shooting according to predetermined criteria.
- Collect and process biological specimens.
- Correlate laboratory results to diagnosis of clinical conditions and/or diseases.
- Monitor and evaluate quality control in the laboratory.
- Practice laboratory safety and regulatory compliance.
- Perform information processing in the clinical laboratory.
- Model professional behaviors, ethics, and appearance.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

Most Medical Laboratory Technicians work in hospitals or clinic labs. Some Medical Laboratory Technicians may choose to work for veterinary laboratories, industrial labs, insurance companies, research facilities, environmental labs, or public health.

Medical Laboratory Technician: applies knowledge of test procedures and quality control methods in the areas of hematology, chemistry, serology, urinalysis, blood bank, microbiology, and phlebotomy; performs tests accurately and efficiently using both automated and manual methodology; evaluates the clinical significance of test results.

Clinical Experience

- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Dependent on availability of sites, students may need to travel distances for clinical experiences.
- Students are required to maintain a current American Heart Association Healthcare Provider CPR card to comply with affiliating agency requirements.
- Students will be required to show proof of annual flu vaccine.
- Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Accreditation

The Medical Laboratory Technician program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) 5600 N River Road, Suite 720 Rosemont, IL 60018, (847) 939-3597

Board/Certification Examinations

Graduates are qualified to take the Board of Certification examination from the American Society for Clinical Pathology.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admission Skills Assessment or equivalent or ACT assessment taken within the last five years. (For a list of equivalents, please contact a Counselor.)
- Two semesters High School, or one semester in College of Algebra and Advanced Math, completed with a "C" or better.
- Two semesters High School, or one semester in College of Biology and Chemistry (with a lab component) completed with a grade of "C" or better.

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 90; Reading Comprehension, 90; Sentence Skills, 95; Elementary Algebra, 65. ACT benchmarks are Math, 18; Reading, 21; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete mandatory four-hour job shadow.
- Attend mandatory spring program orientation.

Curriculum

Students following the study plan below will complete the Medical Laboratory associate degree in the number of semesters shown.

FIRST SEMESTER

		CREDITS
*10-501-101	Medical Terminology	3
*10-513-110	Basic Lab Skills	1
*10-513-111	Phlebotomy	2
*10-513-113	QA Lab Math	1
*10-513-115	Basic Immunology Concepts	2
++10-806-177	Gen Anatomy & Physiology	4
++10-806-186	Intro to Biochemistry	4
**10-890-101	College 101	1
SEMESTER TOTAL		18

SECOND SEMESTER

*10-513-109	Blood Bank	4
*10-513-114	Urinalysis	2
*10-513-120	Basic Hematology	3
*10-513-121	Coagulation	1
10-801-136	English Composition 1	3
++10-806-197	Microbiology	4
SEMESTER TOTAL		17

SUMMER SEMESTER

10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		6

THIRD SEMESTER

*10-513-130	Advanced Hematology	2
*10-513-131	Clinical Chemistry 1	3
*10-513-132	Clinical Chemistry 2	2
*10-513-133	Clinical Microbiology	4
*10-513-140	Advanced Microbiology	2
SEMESTER TOTAL		13

FOURTH SEMESTER

*10-513-151	Clinical Experience 1	3
*10-513-152	Clinical Experience 2	4
*10-513-153	Clinical Experience 3	4
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		14
TOTAL CREDITS		68

CURRICULUM NOTE

*No final grade lower than a ¡C¡ is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a ¡C¡ in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

++No final grade lower than a "B" is acceptable in General Anatomy & Physiology, Intro to Biochemistry, and Microbiology. A student who withdraws or receives a grade lower than a "B" in these courses may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-513-109 BLOOD BANK ...focuses on blood banking concepts and procedures including blood typing, compatibility testing, work ups for adverse reaction to transfusions, disease states and donor activities. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-115, Basic Immunology Concepts)

10-513-110 BASIC LAB SKILLS ...explores health career options and the fundamental principles and procedures performed in the clinical laboratory. Learners will utilize medical terminology and basic laboratory equipment. Learners will follow required safety and infection control procedures and perform simple laboratory tests. (Prerequisite: Accepted into Medical Laboratory Technician program or Phlebotomy certificate)

10-513-111 PHLEBOTOMY ...this course provides opportunities for learners to perform routine venipuncture, routine capillary puncture and special collection procedures. (Corequisite: 10-513-110, Basic Lab Skills)

10-513-113 QA LAB MATH ...focuses on performing the mathematical calculations routinely used in laboratory settings. Learners will explore the concepts of quality control and quality assurance in the laboratory. Learners will review regulatory compliance requirements, and certification and continuing education programs. (Prerequisite: Accepted into the Medical Laboratory Technician program)

10-513-114 URINALYSIS ...prepares learners to perform a complete urinalysis which includes physical, chemical and microscopic analysis. Learners will explore renal physiology and correlate urinalysis results with clinical conditions. (Prerequisites: 10-513-110, Basic Lab Skills and 10-513-113, QA Lab Math)

10-513-115 BASIC IMMUNOLOGY CONCEPTS ...provides an overview of the immune system including laboratory testing methods for diagnosis of immune system disorders, viral and bacterial infections. (Corequisite: 10-513-110, Basic Lab Skills)

10-513-120 BASIC HEMATOLOGY ...covers the theory and principles of blood cell production and function, and introduces the learner to basic practices and procedures in the hematology laboratory. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-111, Phlebotomy; 10-513-115, Basic Immunology Concepts)

10-513-121 COAGULATION ...introduces the theory and principles of coagulation and explores mechanisms involved in coagulation disorders. Emphasis is placed upon laboratory techniques used to diagnose disease and monitor treatment. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-115, Basic Immunology Concepts; 10-513-111, Phlebotomy; Corequisite: 10-513-120, Basic Hematology)

10-513-130 ADVANCED HEMATOLOGY ...explores mechanisms involved in the development of hematological disorders. Emphasis is placed upon laboratory techniques used to diagnose disorders and monitor treatment. (Prerequisite: 10-513-120, Basic Hematology)

10-513-131 CLINICAL CHEMISTRY 1 ...introduces Clinical Chemistry techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Topics in this course include pathophysiology and methodologies for carbohydrate, lipids, proteins, renal function and blood gas analysis. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA Lab Math; 10-513-114, Urinalysis; 10-806-177, General Anatomy & Physiology; 10-806-186, Intro to Biochemistry)

10-513-132 CLINICAL CHEMISTRY 2 ...a continuation of Clinical Chemistry 1, techniques and procedures for analysis using sophisticated laboratory instrumentation. Topics include pathophysiology and methodologies for hepatic, bone, cardiac markers, tumor markers, endocrine function, fetal function, miscellaneous body fluids, and toxicology. (Corequisite: 10-513-131, Clinical Chemistry 1)

10-513-133 CLINICAL MICROBIOLOGY ...presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification of clinically relevant bacteria. Disease states, modes of transmission and methods of prevention and control, including antibiotic susceptibility testing, are also discussed. (Prerequisites: 10-806-197, Microbiology; 10-513-110, Basic Lab Skills; 10-513-133, Basic Immunology Concepts)

10-513-140 ADVANCED MICROBIOLOGY ...overview of acid fast organisms, fungi, parasites, and anaerobic bacteria. The organisms, their pathophysiology, epidemiology, the diseases and conditions that they cause, laboratory methods of handling, culturing and identification will be discussed. (Corequisite: 10-513-133, Clinical Microbiology)

10-513-151 CLINICAL EXPERIENCE 1 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-152, Clinical Experience 2; 10-513-153, Clinical Experience 3)

10-513-152 CLINICAL EXPERIENCE 2 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-151, Clinical Experience 1; 10-513-153, Clinical Experience 3)

10-513-153 CLINICAL EXPERIENCE 3 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Clinical Chemistry 2; Corequisites: 10-513-151, Clinical Experience 1; 10-513-152, Clinical Experience 2)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Network Specialist - IT teaches
students to design, install, configure,
and maintain computer networks.

Program Outcomes

- Design a local area network (LAN) per specifications.
- Construct a local area network using the required physical components.
- Install network hardware including interface cards and cabling.
- Create effective user environments using Microsoft and UNIX/LINUX operating systems.
- Install and configure network and desktop operating system software.
- Install and configure application software.
- Design, implement, and maintain a secure network environment.
- Exercise structured problem solving techniques.
- Develop technical documentation for network configuration and security.
- Communicate technical information effectively.
- Assess the impact of emerging technologies.
- Maintain computer hardware and peripherals.
- Implement and configure wide area network (WAN) services.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- One year of high school algebra completed.
- User level familiarity with one or more computer operating environments.
- Ability to interact with a computer system (keyboarding or assist device).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Reading Comprehension: 55; Sentence Skills: 75; Arithmetic: 65. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will
have the potential for employment
in the following areas:

Network Support Specialist: designs
and configures networks, installs
hardware and software components,
and maintains network performance.

Network Administrator: develops
security procedures, assigns access
rights, installs application software,
and configures user profiles.

Successful completion of the course
work in this program will also
prepare a student to pursue vendor
certification as a Network Engineer.

With additional education and/or work
experience, graduates may find other
opportunities for employment.

- Cable Installer
- UNIX/LINUX Administrator
- PC Support Specialist
- Help Desk Technician
- IS Certifications, such as MSCE, A+, Network+, Linux+, Security+, VCP-DCV, and CCNA,
- Network Analyst
- Microsoft Network Administrator

Curriculum

Students following the study plan
below will complete the Network
Specialist associate degree in the
number of semesters shown.

FIRST SEMESTER

		CREDITS
10-150-163	IT:Network:Cisco 1	3
10-150-174	IT:Network:Client Op Sys	3
10-154-150	IT:Support:Hardware-Intro	3
10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
10-809-199	Psychology Of Human Relations	3
*10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER

10-150-157	IT:Network:UNIX/LINUX-Intro	3
10-150-165	IT:Network:Microsoft Server 1	3
10-150-168	IT:Network:Cisco 2	3
10-150-182	IT:Network: Virtualization	3
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-102-100	Bus and Info Tech Occup Prep	1
10-107-194	IT:Documentation	2
10-150-145	IT:Network:Security Fund	3
10-150-186	IT:Network:Microsoft Server 2	4
10-150-197	IT:Network:Apps-Linux	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-150-170	IT:Network:Capstone	2
10-150-173	IT:Network:Cisco 3	3
10-150-189	IT:Network: Apps-Microsoft	3
10-150-199	IT:Network: Intern Practicum	2
10-809-166	Intro to Ethics: Theory & App	3
	Elective	3
SEMESTER TOTAL		16
TOTAL CREDITS		69

CURRICULUM NOTE

*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

SUGGESTED ELECTIVES

IT:Network:Firewall Inst/Conf, 10-150-146
IT:Network:Computer Forensics, 10-150-169
IT:Program:Visual Basic, 10-152-163
IT:Support:Advanced Projects, 10-154-157

The following certificates/technical diplomas
may be applied toward this program:
- 901502, Networking Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

**10-102-100 BUS AND INFO TECH
OCCUP PREP** ...career exploration,
self- exploration, career planning,
career placement, job seeking skills.
This course should not be taken before
the 3rd semester or completing at least
half of the core program courses.

10-107-194 IT:DOCUMENTATION
...plan documentation content and delivery
methods; develop online, context-sensitive
written documentation, become familiar with
ISO 9000 standards, package PDF files, and
create compiled help modules. Proficiency
using Word required. (Prerequisite: 10-801-
136, English Composition 1 or equivalent)

**10-150-145 IT:NETWORK:SECURITY
FUNDAMENTALS** ...examine common
security vulnerabilities and defenses used
to protect network resources. Included
is a discussion of security policies, user
awareness training, network monitoring,
and secure network design. (Prerequisites:
10-150-157, IT:Network:UNIX/LINUX-
Intro; 10-150-165, IT:Network:Microsoft
Server 1; 10-150-168, IT:Network:Cisco
2; 10-801-136, English Composition 1)

**10-150-157 IT:NETWORK:UNIX/LINUX-
INTRO** ...an introductory look at Unix/
Linux administration and implementation.
The learner will install, configure, and
administer a Unix/Linux server, populate the
system with users/groups, write scripts, and
troubleshoot system failures. (Prerequisites:
10-150-163, IT:Network:Cisco 1 and 10-150-
174, IT:Network:Client Operating Systems)

10-150-163 IT:NETWORK:CISCO 1
...cable characteristics and termination,
structured cabling systems, OSI
reference model, IP addressing and
subnetting, network architectures and
basic protocols, Ethernet switches, basic
router operation and configuration.

**10-150-165 IT:NETWORK:MICROSOFT
SERVER 1** ...Microsoft Server OS
administration and implementation.
Learner will install and configure the
OS, Active Directory, Group Policies, IIS
and security. (Prerequisite: 10-150-174,
IT:Network:Client Operating Systems)

10-150-168 IT:NETWORK:CISCO 2
...basic routing and packet-forwarding
concepts; understanding, configuring
and troubleshooting dynamic routing
protocols; IP addressing with VLSM;
static routes. (Prerequisite: 10-150-
163, IT:Network: Cisco 1)

10-150-170 IT:NETWORK:CAPSTONE
...individual case studies to review and
consolidate the knowledge and skills
gained in previous classes. Course is
intended to be taken during the student's
last semester. (Prerequisites: 10-150-145,
IT:Network:Security Fundamentals; 10-
150-186, IT:Network:Microsoft Server
2;10-150-197, IT:Network:Apps-Linux)

**10-150-173 IT:NETWORK:CISCO
3** ...layer 2 & 3 switching, switch
configuration, management and security,
configure and manage VLANs, trunking,
inter-VLAN routing, access control lists and
other advanced Cisco topics. (Prerequisite:
10-150-168, IT:Network:Cisco 2)

**10-150-174 IT:NETWORK:CLIENT
OPERATING SYSTEMS** ...basic OS
functions; memory, CPU, device/file
management techniques, OS installation/
configuration; configuration of I/O and storage
devices; basic network connectivity; standard
system maintenance procedures; command
line introduction and batch file writing.

**10-150-182 IT:NETWORK:
VIRTUALIZATION** ...designing,
implementing, and securing aspects of
virtualization environments including,
but not limited to, storage technologies,
virtual network infrastructure, and virtual
machine installation, configuration, and
migration. (Prerequisites: 10-150-163,
IT:Network:Cisco 1; 10-150-174, IT:
Network: Client Operating Systems)

**10-150-186 IT:NETWORK:MICROSOFT
SERVER 2**...remote workstation installation
and administration, DHCP, DNS, IPsec,
and VPN. Enterprise software deployment,
Terminal Services, multi domain
management and migration. Administration
scripting, performance monitoring, and
network security. (Prerequisites: 10-150-
165, IT:Network:Microsoft Server 1;
10-150-168, IT:Network:Cisco 2)

**10-150-189 IT:NETWORK:
APPLICATIONS-MICROSOFT**
...fundamentals of project management,
software installation in a network
environment, application launching options,
application and data security, Groupware
applications, Network utility software,
and effective user support. (Prerequisites:
10-150-186, IT:Network:Microsoft Server
2; 10-150-168, IT:Network:Cisco 2)

**10-150-197
IT:NETWORK:APPLICATIONS-LINUX**
...designing, implementing, and securing
various network applications and services
in a Linux-based network including,
Web, Email, Infrastructure, and Database
services. These services will be implemented
using both physical and virtualized
Linux servers. (Prerequisite: 10-150-157,
IT:Network:UNIX/LINUX-Intro)

**10-150-199 IT:NETWORK: INTERN
PRACTICUM** ...practical hands-on
experience applying skills developed in the
program at an approved site with supervision
by an employer and the instructor with
related projects and discussion. (Prerequisites:
10-801-136, English Composition I;
10-801-133, Math & Logic; Corequisite:
10-102-100, Bus and Info Tech Occup Prep)

**10-154-150 IT:SUPPORT:HARDWARE-
INTRO** ...computer network terminology,
component identification, POST, computer/
peripheral configuration and maintenance,
basic operating systems concepts and
installations, basic networking concepts
and configurations and troubleshooting
using the Cisco IT Essentials curriculum.

Nuclear Technology Program Code 106241 | Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Lakeshore Technical College.

Program Description

The increasing use of radiation and radioactive materials in today's world has created a demand for nuclear technicians. This demand is expected to remain high for years to come. The Nuclear Technology program offers students a unique opportunity to obtain the specialized training in demand by businesses and organizations licensed to utilize radioactive materials. It is also an excellent springboard for a four-year degree in the high-demand fields of Health Physics, Radiation Safety and Nuclear Engineering.

Nuclear technicians have a variety of career opportunities at businesses such as nuclear power facilities, radioactive waste handling facilities, radiopharmaceutical companies, universities and national laboratories, medical facilities, U. S. Department of Energy sites, hospitals, or emergency management organizations.

The Nuclear Technology program is a shared program between Lakeshore Technical College (LTC) in Cleveland, WI, and Northeast Wisconsin Technical College (NWTC) in Green Bay, WI. Classes are offered in a traditional classroom setting using Interactive Television (ITV) methods to link the two Technical Colleges. For flexibility, some classes may be taken in an online format through LTC using established distance learning methods. The Nuclear Technology program is closely linked with the Radiation Safety Technician Certificate program at LTC.

Program Outcomes

• Work safely within industrial and radiological hazard areas.
• Understand and communicate nuclear technology-related concepts effectively in both oral and written formats.
• Diagnose equipment requiring electrical or mechanical repair and carry out preventive maintenance procedures.
• Perform radiological surveys for radiation and radioactive contamination.
• Follow procedures for operating and maintaining systems and equipment at nuclear facilities.
• Participate in applying nuclear technologies to a variety of industrial, medical, and research processes.
• Apply your knowledge in a variety of related occupational jobs, such as in reactor plant operations, maintenance, quality assurance, etc.

Requirements for Program Entry

• Completed application at Lakeshore Technical College. Go to www.gotoltc.edu or call (888)468-6582

Employment Potential

• Nuclear Power Facilities
• Radioactive Waste Handling Facilities
• Radiopharmaceutical Companies
• Universities and National Laboratories
• Medical Facilities
• U.S. Department of Energy Sites
• Hospitals
• Emergency Management

About Shared Programs

• NWTC will offer in-person courses at the Green Bay campus, with the following exceptions: courses denoted with (*) are delivered to NWTC from LTC via ITV/VC; courses denoted with (**) are offered only at LTC.
• Contact Lakeshore Technical College for all Benchmarks.

Curriculum

The Nuclear Technology Associate Degree is a two-year, six semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus and will take part in ITV classes sent from LTC to NWTC. Upon graduation a student will have completed 71 credits.

FIRST SEMESTER		CREDITS
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-624-105	Health Physics Calculations	3
10-624-110	Nuclear Technology and Regs	3
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-624-114	Nuclear Systems and Sources	3
10-624-122	Radiation Physics	3
10-624-123	Radiation Physics-Lab	2
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-801-196	Oral/Interpersonal Comm	3
10-804-196	Trigonometry w Apps	3
SEMESTER TOTAL		**16**

SUMMER SEMESTER		
10-624-118	Radiation Biology	3
10-806-134	General Chemistry	4
SEMESTER TOTAL		**7**

THIRD SEMESTER		
*10-624-132	Radiological Emergencies	2
*10-624-133	Radioactive Material Mgmt	2
*10-624-134	Radiation Shielding	2
10-624-135	Radiation Shield-Lab	1
*10-624-149	Reactor Plant Components	4
10-806-154	General Physics 1	4
10-809-197	Contemporary Amer Society	3
SEMESTER TOTAL		**18**

FOURTH SEMESTER		
*10-624-140	Radiochemistry	2
*10-624-145	Applied Health Physics	3
10-624-156	Nuclear Technology Internship	2
OR		
10-624-146	Applied Health Physics-Lab	2
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**10**

SUMMER SEMESTER		
10-624-148	Reactor Theory and Operations	3
SEMESTER TOTAL		**3**
TOTAL CREDITS		**71**

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-624-105 HEALTH PHYSICS CALCULATIONS AND STATISTICS ...prepares the learner to solve linear and exponential equations, logarithms, plot graphs, determine counting statistics and reliability, and work with geometry and trigonometry problems.

10-624-110 NUCLEAR TECHNOLOGY AND REGULATIONS ...introduces the learner to atomic and nuclear structure; radioactivity and half-life; regulations standards; and Title 10 Parts 19, 20, 30 and 35 of the Code of Federal Regulations.

10-624-114 NUCLEAR SYSTEMS AND SOURCES ...introduces the learner to the major components of accelerators, lasers, isotope generators, nuclear gauging devices, X-ray tubes, nuclear reactors, and natural/background sources and the radiation hazards associated with them.

10-624-118 RADIATION BIOLOGY ...prepares the learner to convert measuring units and activity to dose rates, predict the effect of radiation on living cells and human organs, evaluate radiation risk, and calculate internal doses.

10-624-122 RADIATION PHYSICS ...introduces the learner to health physics-related physics, properties of radiation, detection and measuring radiation, and gas-filled and solid-state detectors.

10-624-123 RADIATION PHYSICS-LAB ...expands the learner's ability to perform calculations, select instruments, and analyze samples. This course is associated with 10-624-122, Radiation Physics.

10-624-132 RADIOLOGICAL EMERGENCIES ...prepares the learner to plan and assist in emergencies involving radioactive material and radiation by calculating projected doses, collecting environmental samples, following emergency plans, and managing affected personnel.

10-624-133 RADIOACTIVE MATERIAL MANAGEMENT ...introduces the learner to the proper methods used to dispose of radioactive waste in liquid, solid, gaseous forms; determine waste classification, package/label requirements, proper type of transport container, shipment quantity classification, storage distance for people and film during shipments by rail/vessel/public roads, proper shipping name and UN number; completion of proper shipping papers; document materials inventory/shipments; evaluate methods used to process low level and high level waste.

10-624-134 RADIATION SHIELDING ...provides the learner with the skills to calculate radiation attenuation from various geometric radioactive sources, determine the effect of neutron radiation on materials, and estimate the exposure rate from various sources.

10-624-135 RADIATION SHIELD - LAB ...expands the learner's ability to perform shielding of ionizing radiation sources and to measure the penetration of alpha beta and gamma radiation.

10-624-140 RADIOCHEMISTRY ...prepares the learner to separate dissolved, suspended, liquid, and ionic radioactive components; perform qualitative and quantitative analysis of samples; and prevent the production of radioactive material by using proper chemical control.

10-624-145 APPLIED HEALTH PHYSICS ...prepares the learner to issue dosimetry, calculate neutron dose, monitor personal exposure, calculate radioactive airborne activity concentration, estimate radioactive, airborne concentration, issue respirators, determine contamination levels, recommend protective clothing, reduce the spread of contamination, conduct an ALARA audit, reduce the total radiation exposure, maintain records and estimate exposure to internal organs.

10-624-146 APPLIED HEALTH PHYSICS-LAB ...expands the learner's ability to perform applied health physics tasks as covered in Applied Health Physics, 10-624-145. This course is associated with 10-624-145.

10-624-148 REACTOR THEORY AND OPERATIONS ...introduces the learner to the basic reactor types, the fission process, reactivity/criticality, reactor kinetics, heat removal, residual/decay heat, basic reactor types, nuclear plant water chemistry, and reactor thermodynamics.

10-624-149 REACTOR PLANT COMPONENTS ...introduces basic mechanical and electrical components used by nuclear power plants such as different types of piping, valves, pumps, ejectors, filters, turbines, heat exchangers, compressors, lubrication systems, valve actuators, breakers, transformers, relays, and other equipment.

10-624-156 NUCLEAR TECHNOLOGY INTERNSHIP ... internship enhances the student's ability to apply technical skills to work productively, communicate effectively, and demonstrate appropriate ethics and behavior in a professional workplace environment.

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description

The Nursing Assistant program prepares students for employment as nursing assistants. The program also prepares Nursing Assistant students with some of the skills needed for the first semester of the Nursing program. During the 120 hour course, students will be required to demonstrate the following skills under the supervision of a licensed nurse: communication, basic nursing assistant and personal care skills, attention to clientís rights; and care of clients with dementias. The program is recognized by the Wisconsin Department of Health Services as a nurse-aide training program. Upon successful completion of the program, the student is eligible to take the Wisconsin Nursing Assistant competency evaluation for employment in nursing homes, hospitals, home health agencies, hospices, CBRF's, assisted living centers and homes for the developmentally disabled.

Program Outcomes

- Apply for competency testing to be placed on the Wisconsin Nurse Aide Registry.
- Obtain employment as a Nursing Assistant.
- Display behavior which supports and promotes residents' rights.
- Perform basic nursing/personal care skills.
- Assist residents in attaining and maintaining independence.
- Interact effectively with residents experiencing dementias.
- Interact on a one-to-one-basis with residents, with sensitivity to their emotional, social, and mental health.

Requirements for Program Entry

- Be at least 16 years old.

- Push, pull, lift, and/or support up to 50 pounds of weight.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Nursing Assistant: performs basic nursing tasks under the supervision and direction of the Registered Nurse in a nursing home, home health environment, or hospital setting.

Note

- All textbook and Blackboard assignments must be completed before attending clinical.
- Class requirements include work on the Internet. Access to high speed Internet is highly recommended.
- This course is completed within six to eight weeks and will meet at least one to two days a week.
- Classroom and clinical attendance is mandatory. Any missed classroom and clinical hours must be made up.

Clinical Experience

Students will be required to purchase a nametag, gait belt, and uniform,

Curriculum

The Nursing Assistant Technical Diploma is a 120-hour program that includes skill pre-work, lecture, lab and clinical. Upon graduation, a student will have completed three credits. Orientation will take place during the first class.

FIRST SEMESTER	CREDITS
30-543-300 Nursing Assistant	3
SEMESTER TOTAL	3
TOTAL CREDITS	3

pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances to meet clinical requirements.

Requirements for Program Application

- NWTC requires an entrance skill inventory for all program students.
- Requirements for program entry must be completed prior to the start of the program.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Reading Comprehension, 55. Applicants not meeting these benchmarks are encouraged to contact an advisor at (920) 498-5444 or (888) 385-6982.
- Submit clinical requirements. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Students will be required to show proof of an annual flu vaccine.
- Prior to registering for class, meeting Functional Abilities Inventory requirements (accessible at www.nwtc.edu).
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-543-300 NURSING ASSISTANT... basic nursing/personal care skills, principles of communication skills, resident rights and team work with other care givers under the supervision of a licensed nurse. (Prerequisite: Accepted in the Nursing Assistant program. Call 1-888-385-6982, ext. 7159 or go to http://www.nwtc.edu/NursingAssistant_Admissions for directions.)

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. The first year of the program is also offered at the West Regional Learning Center-Shawano. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. For information in Shawano: (715) 524-2418. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Graduates plan, provide, and evaluate patient care. They act as liaisons between physicians, other health care workers, and the patient. They supervise other health care providers.

Program Outcomes

- Implement one's role as a nurse in ways that reflect integrity, responsibility, ethical practices, and an evolving professional identity as a nurse committed to evidence-based practice, caring, advocacy and quality care.
- Demonstrate appropriate written, verbal, and nonverbal communication in a variety of clinical contexts.
- Integrate social, mathematical, and physical sciences, pharmacology, and pathophysiology in clinical decision making.
- Provide patient centered care by utilizing the nursing process across diverse populations and health care settings.
- Minimize risk of harm to patients, members of the healthcare team and self through safe individual performance and participation in system effectiveness.
- Lead the multidisciplinary health care team to provide effective patient care throughout the lifespan.
- Use information and technology to communicate, manage data, mitigate error, and support decision-making.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. For information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program who becomes a Registered Nurse in a variety of health care settings will have the potential for employment in the following areas:

STAFF NURSE: is responsible for making nursing diagnoses and treating human responses to actual and potential health problems in health care facilities and insurance areas.

CHARGE NURSE: assumes the same responsibilities of a Registered Nurse in addition to directing the work flow and coordinating and managing the provision of care of patients and other staff in a medical facility.

Clinical Experience

- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.
- Students will be required to show proof of an annual flu vaccine.

Accreditation

The Nursing-Associate Degree program is accredited by:Accreditation Commission for Education in Nursing, Inc. (ACEN), 3343 Peachtree Road, NE, Suite 850, Atlanta GA 30326
(404) 975-5000 FAX: (404) 975-5020

The Nursing Associate Degree program is approved by:
Wisconsin Department of Safety and Professional Services
Dept. of Regulation & Licensing
1400 East Washington St.
P.O. Box 8935, Madison, WI 53708-8935
(608) 266-2112

Board/Certification Examinations

Graduates are eligible to take the NCLEX-RN Examination for licensure as a Registered Nurse (RN).

After completion of second semester, students are eligible to take the NCLEX-PN for licensure as a Practical Nurse

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 79; Reading Comprehension, 95; Sentence Skills, 113. ACT benchmarks are Math, 18; Reading, 21; English 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or wait list status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.
- One semester of college Chemistry with a "C" or better OR two semesters of high school Chemistry with a "C" or better. NWTC course that would fulfill Chemistry requirement; 10-806-134.

One semester of college Biology with a "C" or better OR two semesters of high school Biology with a "C" or better. NWTC courses that would fulfill Biology requirement: 31-806-312, Anatomy Structure/Function; 10-806-189, Basic Anatomy; 10-806-177, General Anatomy & Physiology.

Requirements for Program Entry

- Attend mandatory orientation.
- Submit required immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program..
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply

with affiliating agency requirements. Recommended completing between program orientation and program start.
- All students must successfully complete a DHS approved Nursing Assistant course prior to program entry.

Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

Flexible Learning Option

A part-time evening/weekend track is available. This option is scheduled over eight-semesters, including three summers.

Note
- Graduates are eligible to apply for direct transfer of credit in the Bachelor of Science completion nursing programs at the University of Wisconsin and private colleges and universities.
- Individuals with criminal records may be ineligible for licensure. Individuals with abuse records may be ineligible for employment in nursing homes.
- Licensed Practical Nurses may receive advanced standing for nursing courses in the first year of the program.

Curriculum

Students following the study plan below will complete the Nursing Associate Degree program in the number of semesters shown. For alternate study plans, refer to the information in the Related Links area at the right of this page.

SUMMER SEMESTER	CREDITS
*10-806-186 Intro to Biochemistry	4
**10-890-101 College 101	1
SEMESTER TOTAL	5

FIRST SEMESTER	
*10-543-101 Nursing Fundamentals	2
*10-543-102 Nursing Skills	3
*10-543-103 Nursing Pharmacology	2
*10-543-104 Nsg: Intro Clinical Practice	2
10-801-136 English Composition 1	3
*10-806-177 Gen Anatomy & Physiology	4
10-809-188 Developmental Psychology	3
SEMESTER TOTAL	19

SECOND SEMESTER	
*10-543-105 Nursing Health Alterations	3
*10-543-106 Nursing Health Promotion	3
*10-543-107 Nsg: Clin Care Across Lifespan	2
*10-543-108 Nsg: Intro Clinical Care Mgt	2
10-801-196 Oral/Interpersonal Comm	3
*10-806-179 Adv Anatomy & Physiology	4
SEMESTER TOTAL	17

THIRD SEMESTER	
*10-543-109 Nsg: Complex Health Alterat 1	3
*10-543-110 Nsg: Mental Health Comm Con	2
*10-543-111 Nsg: Intermed Clin Practice	3
*10-543-112 Nursing Advanced Skills	1
*10-806-197 Microbiology	4
10-809-198 Intro to Psychology	3
SEMESTER TOTAL	16

FOURTH SEMESTER	
*10-543-113 Nsg: Complex Health Alterat 2	3
*10-543-114 Nsg: Mgt & Professional Concepts	2
*10-543-115 Nsg: Adv Clinical Practice	3
***10-543-116 Nursing Clinical Transition	2
10-809-196 Intro to Sociology	3
SEMESTER TOTAL	13
TOTAL CREDITS	70

CURRICULUM NOTE
*No final grade lower than a "B" is acceptable in the nursing or natural science courses marked with an asterisk. A student must repeat the particular course with "B" or better final grade to continue in or graduate from this program. If the course is sequential, the successful retake must occur before continuing the sequence.

**The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

*** Must complete 10-543-115, Advanced Clinical Practice, with a "B" prior to the start of 10-543-116, Clinical Transition.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-543-101 NURSING FUNDAMENTALS ...focuses on basic nursing concepts to provide evidenced-based care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients. (Prerequisites: Accepted into Nursing-AD program; 10-806-186, Intro to Biochemistry; Corequisites: 10-806-177, Gen Anatomy & Physiology; 10-543-103, Nursing Pharmacology)

10-543-102 NURSING SKILLS ...focuses on development of evidence-based clinical skills and physical assessment across the lifespan. Content includes mathematical calculations and conversions related to clinical skills. In addition the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach. (Prerequisites: Accepted into Nursing-AD Program; 10-806-186, Intro to Biochemistry; Corequisites: 10-543-101, Nursing Fundamentals; 10-543-103, Nursing Pharmacology)

10-543-103 NURSING PHARMACOLOGY ...this course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisites: Accepted into Nursing-AD Program; 10-806-186, Intro to Biochemistry; Corequisites: 10-543-101, Nursing Fundamentals; 10-806-177, Gen Anatomy & Physiology)

10-543-104 NURSING: INTRO TO CLINICAL PRACTICE ...this introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisites: Accepted into Nursing-AD Program; 10-806-186, Intro to Biochemistry; Corequisites: 10-543-101, Nursing Fundamentals 10-543-102, Nursing Skills: 10-543-103, Nursing Pharmacology; 10-806-177, Gen Anatomy & Physiology)

10-543-105 NURSING HEALTH ALTERATIONS ... examines upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of patients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply evidence-based nursing interventions. It will also introduce concepts of leadership and management. (Prerequisites: Accepted in Nursing-AD program; 10-543-101, Nursing Fundamentals; 10-543-102, Nursing Skills; 10-543-103, Nursing Pharmacology; 10-543-104, Nsg Intro to Clinical Practice; 10-806-177, Gen Anatomy & Physiology; Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-543-106 NURSING HEALTH PROMOTION ...this course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyle choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development. (Prerequisites: 10-543-101, Nursing Fundamentals; 10-543-102, Nursing Skills; 10-543-103, Nursing Pharmacology; 10-543-104, Nsg Intro to Clinical Practice; 10-806-177, Gen Anatomy & Physiology; Corequisites: 10-806-179, Adv Anatomy & Physiology; 10-801-136, English Composition I; 10-809-188, Developmental Psych)

10-543-107 NURSING CLINICAL CARE ACROSS LIFESPAN ...this clinical experience applies nursing concepts and therapeutic interventions to patients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extending care to include the family is emphasized. (Prerequisites: 10-543-101, Nursing Fundamentals; 10-543-102, Nursing Skills; 543-103, Nursing Pharmacology; 10-543-104, Nsg Intro to Clinical Practice: 10-806-177, Gen Anatomy & Physiology; Corequisites: 10-543-105, Nsg Health Alterations; 10-543-106, Nursing Health Promotion; 10-543-108, Nsg Intro to Clinical Care Mgmt; 10-801-196, Oral/Interpersonal Communication; 10-806-179, Adv Anatomy & Physiology; 10-809-188, Developmental Psych)

10-543-108 NURSING: INTRO TO CLINICAL CARE MANAGEMENT ...this clinical experience applies nursing concepts and therapeutic nursing interventions to groups of patients across the lifespan. It also provides an introduction to leadership, management, and team building. (Prerequisites: 10-543-101, Nursing Fundamentals; 10-543-102, Nursing Skills; 10-543-103, Nursing Pharmacology; 10-543-104, Nsg Intro to Clinical Practice; 10-806-177, Gen Anatomy & Physiology; 10-809-188, Developmental Psychology; Corequisites: 10-543-105, Nursing Health Alterations: 10-806-179, Advanced Anatomy & Physiology)

10-543-109 NSG: COMPLEX HEALTH ALTERATIONS 1... prepares the learner to provide and evaluate care for patients across the lifespan with alterations in cardiovascular, respiratory, endocrine, and hematologic systems as well as patients with fluid/electrolyte and acid-base imbalance, and alterations in comfort(Prerequisites: 10-543-105, Nsg Health Alterations: 10-543-106, Nursing Health Promotion; 10-543-107, Nsg Clin Care Across Lifespan; 10-543-108, Nsg Intro to Clinical Care Mgmt; 10-801-196, Oral/Interpersonal Communication; 10-806-179, Adv Anatomy & Physiology)

10-543-110 NURSING: MENTAL HEALTH COMMUNITY CONCEPTS ...this course will cover topics related to the delivery of community and mental health care. Specific health needs of individuals, families, and groups will be addressed across the lifespan. Attention will be given to diverse and at-risk populations. Mental health concepts will concentrate on adaptive/maladaptive behaviors and specific mental health disorders. Community resources will be examined in relation to specific types of support offered to racial, ethnic, economically diverse individuals and groups. (Prerequisites:10-543-105, Nsg Health Alterations; 10-543-106, Nursing Health Promotion; 10-543-107, Nsg Clin Care Across Lifespan: 10-543-108, Nsg Intro to Clinical Care Mgmt; 10-801-196, Oral/Interpersonal Communication)

10-543-111 NURSING: INTERMEDIATE CLINICAL PRACTICE ...this intermediate level clinical course develops the RN role when working with clients with complex health care needs. A focus of the course is developing skills needed for managing multiple clients and priorities across the lifespan. Using the nursing process, students will gain experience in adapting nursing practices to meet the needs of clients with diverse needs and backgrounds. (Prerequisites:10-543-105, Nsg Health Alterations; 10-543-106, Nursing Health Promotion; 10-543-107, Nsg Clin Care Across Lifespan; 10-543-108, Nsg Intro to Clinical Care Mgmt: 10-801-196, Oral/Interpersonal Communication; 10-806-179, Adv Anatomy & Physiology; Corequisites: 10-806-197, Microbiology; 10-543-109, Nsg Complex Hlth Alter 1; 10-543-112, Nursing Adv Skills; 10-809-198, Intro to Psych)

10-543-112 NURSING ADVANCED SKILLS ... focuses on the development of advanced clinical skills across the lifespan. Content includes advanced intravenous skills, blood product administration, chest tube systems, basic electrocardiogram interpretation and nasogastric/feeding tube insertion. (Prerequisites: 10-543-105, Nsg Health Alterations; 10-543-106, Nursing Health Promotion; 10-543-107, Nsg Clin Care Across Lifespan; 10-543-108, Nsg Intro to Clinical Care Mgmt; 10-801-196, Oral/Interpersonal Communication; 10-806-179, Adv Anatomy & Physiology)

10-543-113 NURSING: COMPLEX HEALTH ALTERATIONS 2 ... prepares the learner to provide and evaluate care for patients across the lifespan with alterations in the immune, neuro-sensory, musculoskeletal, gastrointestinal, hepatobiliary, renal/urinary, reproductive systems and shock, burns and trauma. The learner will also focus on management of care for patients with high-risk perinatal conditions and high-risk newborns. (Prerequisites: 10-543-109, Nsg: Complex Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Concepts; 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nursing Adv Skills; 10-806-197, Microbiology)

10-543-114 NURSING: MANAGEMENT/PROFESSIONAL CONCEPTS ...this course covers nursing management and professional issues related to the role of the RN. Emphasis is placed on preparing for the RN practice. (Prerequisites: 10-543-109, Nsg: Health Alter 1; 10-543-110, Nsg Mental Hlth & Comm Concepts; 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nursing Adv Skills; 10-806-197, Microbiology)

10-543-115 NURSING: ADVANCED CLINICAL PRACTICE ...this advanced clinical course requires the student to integrate concepts from all previous courses in the management of groups of clients facing complex health alterations. Students will have the opportunity to further develop critical thinking skills using the nursing process in making clinical decisions. Continuity of care through interdisciplinary collaboration is emphasized. (Prerequisites: 10-543-109, Nsg: Complex Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Concepts: 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nsg Adv Skills; 10-806-197, Microbiology; Corequisites: 10-543-113, Nsg: Complex Hlth Alterations 2; 10-809-196, Intro to Sociology)

10-543-116 NURSING CLINICAL TRANSITION ...this clinical experience integrates all knowledge learned in the previous courses in transitioning to the role of the graduate nurse. The course promotes relatively independent clinical decisions, delegation, and works collaboratively with others to achieve client and organizational outcomes. Continued professional development is fostered. (Prerequisites: 10-543-109, Nsg: Complex Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Concepts; 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nsg Adv Skills; 10-806-197, Microbiology; Corequisites: 10-543-113, Nsg: Complex Hlth Alterations 2; 10-543-115, Nsg: Adv Clinical Practice; 10-543-114, Nsg Mgmt & Prof Concept; 10-809-196, Intro to Sociology)

Office Professional   Program Code 311061 | Technical Diploma

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
Office Professional students are prepared for entry-level office positions. Skills are developed in word processing, spreadsheet, presentation graphics, database, document creation, telephone messaging, records management, office procedures, and keyboarding. Credits earned in the program can be applied toward the Software Level 1 and/or Software Level 2 certificates and the Administrative Professional Associate Degree program.

Program Outcomes
• Demonstrate effective workplace communications.
• Apply technology skills to business and administrative tasks.
• Perform routine administrative procedures.
• Manage administrative projects.
• Maintain business relationships.
• Model professionalism in the workplace.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
• Basic math.
• Keyboarding proficiency at 30 WPM using the TOUCH method is required. (Mandatory pre-admission keyboarding test to be taken at the NWTC Assessment Center.)
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer)

with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Office Professional: performs a variety of duties related to keyboarding, filing, word processing, telephoning, making appointments, recordkeeping, setting up meetings, handling customer relations, entering data, and handling incoming and outgoing mail.

Records Coordinator: works in offices with a great volume of records in which indexing, cross-referencing, filing, retrieving, and charging-out records are important job functions.

Front Desk Coordinator: manages the company's lobby area; greets and directs all visitors, including vendors, clients, job candidates and customers; ensures completion of paperwork, sign-in and security procedures; handles special administrative projects, as well as overflow work from department and executive assistants; depending on the size of the firm, also may answer incoming calls.

With additional education and/or work experience, graduates may find other opportunities for employment.

Curriculum
Students following the study plan below will complete the Office Professional technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-103-121	Micro: Word-Intro	1
10-103-122	Micro: Word-Part 2	1
10-103-151	Micro: PowerPoint-Intro	1
10-106-102	Info Process Principles	2
10-106-107	Keyboard-Speed Building 1	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
10-801-136	English Composition 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-106-127	Admin Business Procedures 1	3
10-106-132	Proofreading/Editing Essen 2	2
10-106-142	Software Projects	3
10-106-154	Records Management	3
10-106-172	Telephone/Messaging Skills	1
10-106-197	Office Prof Intern Practicum	1
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		19
TOTAL CREDITS		36

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Portfolio: Students are required to complete a program portfolio prior to graduation.

• Administrative Professional
• Executive Assistant
• Team Leader
• Office Manager

The following certificates/technical diplomas may be applied toward this program:
• 901031, Software Level 1 Certificate

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self-exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-103-111 MICRO: WINDOWS/ COMPUTER BASICS ...Windows desktop elements, help features, folder and file management (create, delete, move, find file), and Search strategies. Blackboard, internet, and e-mail usage.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including working with headers/footers, inserting quick parts, themes, styles, sort and select; footnotes/endnotes, images, shapes, shared documents; specialized tables and indexes; forms; and sharing data. (Corequisite: 10-103-121, Micro: Word-Intro)

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating/ modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-106-102 INFORMATION PROCESSING PRINCIPLES ...an introduction to the information processing cycle including new technology, computer system unit, Internet research, input and output devices, software, networks, ergonomics, and data storage.

10-106-107 KEYBOARD-SPEED BUILDING 1 ...skill development on the alphabetic keyboard using analytic/diagnostic software. Requires touch keyboarding at 30 wpm. Students can learn touch keyboarding method in 10-106-145, Keyboarding.

10-106-127 ADMINISTRATIVE BUSINESS PROCEDURES 1 ...today's business environment includes management of prioritization and organizational skills, workplace mail and copying, meeting coordination, and creating effective business communication using appropriate formats and variety of application tools. (Prerequisites: 10-106-131, Proofreading/ Editing Essentials 1; 10-106-102, Information Processing Principles; Corequisite: 10-106-142, Software Projects)

10-106-131 PROOFREADING/EDITING ESSENTIALS 1 ...develop skills for using, identifying, and correcting grammar, spelling, punctuation, capitalization, numbers and abbreviations to creat error-free business documents. Introduction to and use of reference resources and portfolio guidelines. (Corequisite: 10-801-136, English Composition 1)

10-106-132 PROOFREADING/EDITING ESSENTIALS 2 ...apply advanced proofreading, editing and composition skills in electronic and business documents using reference manuals and other resources. Multitasking and decision-making skills are enhanced through proofreading abilities. (Prerequisite: 10-106-131, Proofreading/Editing Essentials 1)

10-106-142 SOFTWARE PROJECTS ...applying Windows and Word features to manage and format business documents while exercising decision-making, increasing efficiency, and enhancing keyboarding skills. Windows, advanced Word, and minimum 45 wpm is highly recommended. (Prerequisite: 10-106-107, Keyboard-Speed Building 1; Corequisite: 10-103-122, Micro: Word-Part 2)

10-106-153 PROFESSIONAL PROFILE ...developing a professional image and attitude, including study of business ethics and etiquette; goal setting; anger, stress, and time management; understanding of diverse cultures; and development of platform skills.

10-106-154 RECORDS MANAGEMENT ...major systems of filing classification: alphabetic, numeric, geographic and subject; retention and disposition of records; records equipment and technology.

10-106-172 TELEPHONE/MESSAGING SKILLS ...using the telephone effectively and efficiently in the world of work; telephone etiquette, messaging, and voice mail.

10-106-197 OFFICE PROFESSIONAL INTERN PRACTICUM ...hands-on experience applying skills developed in the program at an approved employment site with employer supervision and discussion with the instructor. Course should be taken during the last semester. (Corequisites: 10-102-100, Bus and Info Occup Prep; 10-106-127, Administrative Business Procedures 1; 10-801-136, English Composition 1; 10-804-123, Math w Business Apps)

Ophthalmic Medical Assistant   Program Code 315164 | Technical Diploma

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is not eligible for financial aid.

Program Description
The Ophthalmic Medical Assistant program prepares students for employment in ophthalmologic and optometric practices and in retail optical settings. Students apply technical skills to perform prescreening and specialty testing; assist with dispensing glasses and contact lenses; and perform office management duties, including maintaining patient information and billing and insurance processes.

Program Outcomes
- Apply technical skills to perform eye care prescreening and specialty testing procedures on patients accurately and efficiently.
- Apply technical skills to educate and assist patients with glasses and/or contact lenses to meet their eye health and visual needs.
- Perform business office procedures such as maintaining appointment schedules, maintaining patient records, processing insurance reimbursement, and bill patients.

- Demonstrate professional ethics, honesty, and respect when dealing with doctors, patients, and co-workers.
- Communicate clearly and professionally in both written and oral formats.

Requirements for Program Entry
- Work with Admission Specialists to:
- Submit Application and $30 Fee
- Schedule an Assessment for Placement (Accuplacer or ACT)
- Submit Official Transcripts (High School and Other Colleges)
- *Meet with Program Advisor/Counselor to Discuss Program Details

Employment Potential
- Optometric Assistant
- Ophthalmic Assistant
- Optical Assistant
- Contact Lens Technician

Curriculum
The Ophthalmic Medical Assistant Technical Diploma is a three semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Upon graduation, a student will have completed 43 credits.

FIRST SEMESTER		CREDITS
10-501-101	Medical Terminology	3
10-501-104	Healthcare Customer Serv.	2
10-501-107	Intro to Health Care Computing	2
31-501-301	Learning Strategies for Health	1
31-516-306	Basic Ocular Science	4
SEMESTER TOTAL		12

SECOND SEMESTER		
10-809-199	Psychology Of Human Relations	3
31-509-302	Human Body in Health & Disease	3
31-516-302	Optical Dispensing	3
31-516-303	Optical Concepts	3
31-516-304	Ophthalmic Pre-Testing	3
SEMESTER TOTAL		15

THIRD SEMESTER		
31-509-301	Medical Asst Admin Procedures	2
31-509-307	Med Office Insurance & Finance	2
31-509-309	Medical Law, Ethics & Profess	2
31-516-312	Contact Lenses	2
31-516-330	Ophthalmic Clinical Procedures	4
31-516-343	Ophthalmic Clinical Experience	3
SEMESTER TOTAL		15
TOTAL CREDITS		42

CURRICULUM NOTE
Suggested 1st Semester Course: 31-501-301, Learning Strategies for Health Care, 1 credit

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COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

31-509-301 MEDICAL ASSISTANT ADMINISTRATIVE PROCEDURES... introduces medical assistant students to office management, business administration and the electronic medical record (EMR) in the medical office. Students learn to schedule appointments, perform filing, record keeping, telephone and reception duties and communicate effectively with patients and other medical office staff, and keep an inventory of supplies. (Prerequisite: Accepted into Medical Assistant program or shared LTC Ophthalmic Medical Assistant program; Corequisites: 10-501-107, Intro to Healthcare Computing or any other computer course)

31-509-302 HUMAN BODY IN HEALTH & DISEASE ...focuses on diseases that are frequently first diagnosed and treated in the medical office setting. Students learn to recognize human body anatomy and the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases. (Prerequisite/Corequisite: 10-501-101, Medical Terminology)

31-509-309 MEDICAL LAW ETHICS & PROFESSIONALISM...prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform quality improvement procedures, examine legal and bioethical issues, and demonstrate awareness of diversity.

31-516-302 OPTICAL DISPENSING Öintroduces learners to frame definition, parts and types of frames, measurement of frames and lenses, alignment of frames, inserting and removing lenses, introduction to dispensing of eyewear and frame repairs. (Corequisites: 31-516-303, Optical Concepts; 31-516-304, Ophthalmic Pre-Testing; 31-516-306, Basic Ocular Science. Condition: 31-516-1, Ophthalmic Medical Assistant program requirements met)

31-516-303 OPTICAL CONCEPTS Öbegins the study of the neutralization and verification of spectacle lens powers, to include spherical, cylindrical and prism lenses. Also included are the properties of light and the function of a lens in vision correction as well as a review of basic math needed in vision care and the physiological aspects of vision. (Corequisite: 31-516-302, Optical Dispensing)

31-516-304 OPHTHALMIC PRE-TESTING Öcovers the history of optometry, relationships between optometry, ophthalmology and optician and various paraprofessional careers in vision care. The course involves the study of and practical experience in patient pre-testing such as case history, visual acuity, color vision, pupil evaluation and depth perception as well as the specialized testing procedures such as keratometry and blood pressure. (Corequisite: 31-516-302, Optical Dispensing)

31-516-306 BASIC OCULAR SCIENCE ... introduces learners to the structures, microscopic anatomy, and functional aspects of the eye and visual system. Clinical application emphasizes diseases, disorders and common treatments including pharmacological. (Prerequisite: 315164, Ophthalmic Medical Assistant program requirements met.)

31-516-312 CONTACT LENSES Öprovides the student in-depth exposure to the technical aspects of clinical contact lens practice. Lecture and laboratory experiences emphasize lens verification, patient education and evaluation. (Prerequisite: 31-516-302, Optical Dispensing and Corequisite: 31-516-343, Ophthalmic Clinical Experience)

31-516-330 OPHTHALMIC CLINICAL PROCEDURES SPECIALTY TESTINGÖprovides the student experience and knowledge in areas of special vision care procedures: subjective refraction, visual field testing, slit lamp, Goldmann and non-contact tonometry, ultrasound, basic concepts of orthoptics and the treatment of eye diseases including instillation of eye medications and eye patching. Patient instruction and assistance are emphasized in laboratory sessions. (Prerequisite: 31-516-302 Optical Dispensing and Corequisite: 31-516-343, Ophthalmic Clinical Experience)

31-516-343 OPHTHALMIC CLINICAL EXPERIENCE Öwill have students participate in assigned clinical experience beginning with vision screenings on patients from the college and continues in an optometric, ophthalmology or optical setting. Class discussions are held analyzing the results of the screening as well as the students' performance. The student is expected to achieve specific educational objectives determined for this experience. (Prerequisite: 31-516-302, Optical Dispensing; Corequisites: 31-516-312, Contact Lenses; 31-516-330, Ophthalmic Clinical Procedures and Specialty Testing)

Paralegal Program Code 101101 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
A Legal Assistant or Paralegal is a person qualified by education, training, or work experience who is employed or retained by a lawyer, law office, corporation, governmental agency, or other entity who performs specifically designated substantive legal work for which a lawyer is responsible. Paralegals are not authorized to practice law.

Program Outcomes
• Communicate effectively orally and in writing within the context of a legal environment.
• Work collaboratively while demonstrating professionalism, individual initiative and responsibility.
• Apply ethical principles and critical thinking skills to solve problems in a legal environment.
• Effectively organize legal information.
• Conduct accurate, effective and efficient legal research using both traditional and computerized research techniques.
• Generate work product in various fields of law, using computer software applications typical in a modern legal environment.

Requirements for Program Entry
• Completed application.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
• Ability to use Windows and Microsoft Word proficiently.
• Successful completion of reading and language assessment prior to admission.
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
• Remediation will be strongly recommended for those students not meeting the program benchmarks.
• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test

scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
Paralegals perform work under the supervision of a lawyer in a variety of settings. Paralegals are not authorized to practice law. A graduate may be employed by a private law firm, insurance company, corporation, bank, private business, legal clinic, government agency, legal aid office, law department, special interest group, public defender's office, prosecutor's office, service company, or consulting firm.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Law Office Administrator
• Law Office Manager
• Paralegal Supervisor
• Paralegal Instructor
• Corporate Compliance Officer
• Regulatory Specialist
• Research Analyst

Credentials
The Paralegal Program is approved by the American Bar Association (ABA) and is also a member of the American Association for Paralegal Education.
American Bar Association
541 North Fairbanks Ct.
Chicago, IL 60611
Phone: (312) 988-5617

A Special Note to Learners Holding a Bachelor's Degree
Learners holding a bachelor's degree from an accredited institution have the option of pursuing a Post-Baccalaureate Certificate for Paralegal. For more information, contact Enrollment Services at 888-385-6982.

A Special Note to Those Learners Taking Online Courses
The ABA requires each learner to take a minimum of four legal specialty courses in a live, synchronous "real time" format.

*NWTC requires you to take Civil Litigation 1 (10-110-102) and Civil Litigation 2 (10-110-103), and two other legal specialty courses of your choice, from NWTC in a live, synchronous, "real time" format. NWTC has designated the following courses as legal specialty courses:

Required Legal Specialty Courses
*10-110-102 Civil Litigation 1
*10-110-103 Civil Litigation 2
10-110-104 Legal Research
10-110-105 Legal Writing
10-110-107 Legal Aspects/Business Org.

FIRST SEMESTER		CREDITS
+10-110-101	Paralegal Intro/Legal Ethics	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
10-809-103	Think Critically & Creatively	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-110-102	Civil Litigation 1	3
10-110-104	Legal Research	3
10-110-110	Real Estate Law	3
(or ** choice below)		
10-110-175	Legal Computer Applications	3
SEMESTER TOTAL		16

THIRD SEMESTER		
10-110-103	Civil Litigation 2	3
10-110-106	Law-Family	3
(or ** choice below)		
10-110-107	Legal Aspects/Business Org	3
10-110-114	Estates and Probate	3
(or **choice below)		
10-809-199	Psychology Of Human Relations	3
OR		
10-809-198	Intro to Psychology	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-110-105	Legal Writing	3
10-110-160	Law-Employment	3
(or ** choice below)		
10-110-199	Paralegal Internship Practicum	2
OR		
10-110-197	Paralegal Field Research	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		17
TOTAL CREDITS		67

CURRICULUM NOTE
+A grade of "C" or better must be achieved in 10-110-101 Paralegal Intro/Legal Ethics in order to proceed with core Paralegal courses (those numbered 10-110-XXX).

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

**Students must take 4 of 8 legal specialty courses below:
• 10-110-106 Family Law is only offered in the Fall
• 10-110-110 Real Estate Law is only offered in the Spring
• 10-110-114 Estates and Probate is only offered in the Fall
• 10-110-115 Administrative Law is only offered in the Fall
• 10-110-122 Creditor/Debtor Relations is only offered in the Spring
• 10-110-160 Employment Law is only offered in the Fall
• 10-110-162 International Law and Immigration is only offered in the Spring
• 10-110-165 Contracts & Insurance Law is only offered in the Spring
• 10-110-168 Paralegal Criminal Procedures is only offered in the Spring
• 10-110-169 Indian Law is only offered in the Fall

Suggested Elective: 10-110-200, Comparative Law (If taken as preparation for a Business & Information Technology study abroad offering, the elective requirement will be met.)

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self- exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-110-101 PARALEGAL INTRO/ LEGAL ETHICS ...introduction to the legal profession: ethics, court system, legal research, and roles of the paralegal.

10-110-102 CIVIL LITIGATION 1 ...civil procedure in state and federal courts, the litigation process with emphasis on the paralegal function in investigating and gathering information, and preparing pleadings and motions. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-103 CIVIL LITIGATION 2 ...civil litigation including discovery, settlement, trial, and appellate procedure. (Prerequisites: 10-801-136, English Composition 1; 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better; 10-110-102, Civil Litigation 1)

10-110-104 LEGAL RESEARCH ...research terminology; sources of law; primary/ secondary authority; mandatory/persuasive authority; citation form; factual/legal issues; effective research strategies; validating and updating results; computer-assisted legal research; Internet research. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-105 LEGAL WRITING ...process writing; writing fundamentals; proofreading; in-house documents; legal correspondence; analytical writing; synthesizing cases/ authorities; briefing cases; legal memoranda; persuasive writing; drafting pleadings, motions, legal briefs; drafting discovery documents. (Prerequisites: 10-801-136, English Composition 1; 10-110-101, Paralegal Intro/Legal Ethics with a "C" or better; 10-110-104, Legal Research)

10-110-106 LAW-FAMILY ...this course is designed to familiarize the student with basic legal concepts involved in the area of family relations. The primary emphasis will be in the field of divorce. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-107 LEGAL ASPECTS/ BUSINESS ORGANIZATIONS ...formation, operation, and dissolution of types of business organizations, and substantive and procedural law involving business organizations. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-110 REAL ESTATE LAW ...law of real property, forms of ownership, land description methods, public and private encumbrances, real estate contracts, deeds, financing sources, title evidence, and the closing process. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-114 ESTATES AND PROBATE ...property classification; property ownership; succession; wills: modification, revocation, drafting, execution; client contact; probate courts; trust classification; estate planning; ethics; personal representatives; formal probate; summary proceedings; informal probate. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/ Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-115 ADMINISTRATIVE LAW ...the paralegal's role in preparation and representation of cases before administrative agencies, structure and authority of administrative agencies, procedures, and substantive state and federal administrative law. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/ Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-122 CREDITOR/DEBTOR RELATIONS ...legal rights of creditors and debtors, collection of outstanding debts, execution of judgments, small claims court, bankruptcy procedures, and filing bankruptcy petitions and schedules. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-160 LAW-EMPLOYMENT ...analyze federal and state laws governing employment relationships, job discrimination, sexual harassment, work place privacy, labor standards, and human resource management. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-162 INTERNATIONAL LAW & IMMIGRATION ...develop the knowledge, skills, process and understanding of international law and immigration including international organizations, treaties and courts; student and worker visas; citizenship, residency and removal; and legal systems throughout the world. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-165 CONTRACTS AND INSURANCE LAW ...explore contract formation, breach of contract, defenses to contract, parol evidence rule, statue of frauds, and warranties. Examine insurance law including insurable interests, insurer's duty to defend, subrogation, and bad faith claims. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/ Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-168 PARALEGAL CRIMINAL PROCEDURES ...substantive and procedural criminal law, the role of paralegals in both the prosecution and defense of criminal actions, emphasis on investigations and preparation of legal documents. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/ Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-169 INDIAN LAW ...Wisconsin Indians, tribal sovereignty, federal/Indian relations, tribal governments, tribal courts, treaty making, removal/reservation life, assimilation, reorganization, termination, self-determination, gaming, and other contemporary issues. (Prerequisite FOR PROGRAM ONLY: 10-110-101, Paralegal Intro/Legal Ethics with iCi or better. Corequisite FOR CERTIFICATE ONLY: 10-110-101, Paralegal Intro/Legal Ethics)

10-110-175 LEGAL COMPUTER APPLICATIONS ...legal applications and ethics relating to: PC hardware, software, technology; Microsoft Office Suite; calendaring, timekeeping/billing, and case management software; Internet/e-mail; e-filing and the electronic courthouse; e-discovery; presentation/trial graphics. (Corequisite 10-110-101, Paralegal Intro/Legal Ethics)

10-110-197 PARALEGAL FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Prerequisites: 10-102-100, Bus & Info Tech Occup Prep; 10-801-136, English Composition I; 10-804-107, College Mathematics)

10-110-199 PARALEGAL INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-102-100, Bus & Info Tech Occup Prep; 10-801-136, English Composition I; 10-804-107, College Mathematics)

10-809-103 THINKING CRITICALLY & CREATIVELY ...instruction in realistic/ practical methods of thinking, including decision making, problem solving, analyzing ideas, troubleshooting, argumentation, persuasion, creativity, setting goals/objectives. Students apply strategies/tools in a variety of situations. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 10-838-105, Intro to Reading & Study Skills or 10-831-103, Intro to College Writing w/ a "C" or better OR equivalent)

Paramedic Program
Program Code 315311 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Paramedic students will learn to manage seriously ill and critically injured patients in the out-of-hospital setting using structured patient assessment techniques along with critical care thinking, applying emergency medical treatment protocols based on national scopes of practice, and packaging/transporting patients compliant with Wisconsin approved standards and practices.

Successful completion of the Paramedic program prepares and entitles the student to take the National Registry certification examination for Paramedics. The National Registry certification is required for licensure as a Paramedic in the state of Wisconsin.

Program Outcomes
- Prepare for incident response and EMS operations.
- Integrate pathophysiology principles and assessment findings for a variety of patient encounters.
- Demonstrate paramedic skills associated with established standards and procedures for a variety of patient encounters.
- Communicate clearly and effectively both verbally and through written documentation with clients, coworkers, other agencies, and supervisors.
- Demonstrate professional behavior.
- Meet Wisconsin state and national competency requirements for paramedic credentialing.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Currently licensed as an Emergency Medical Technician (EMT) in the state of Wisconsin.
- Maintain a current AHA Healthcare Provider CPR card on a two-year renewal cycle to comply with affiliating agency requirements.

- Students are required to complete their field experience throughout the duration of the program that would permit the completion of field experience necessary to qualify for licensure.
- First priority for admission is given to applicants sponsored by a Wisconsin licensed ambulance service. Unsponsored applicants are admitted after all sponsored students are admitted.
- Aptitudes required for work of this nature are good physical stamina, endurance, and body condition that would not be adversely affected by frequently having to walk, stand, life, carry, and balance at times, in excess of 125 pounds.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate of the program will have the potential for employment as a Paramedic, Emergency Room Technician, EKG Monitoring Technician, Advanced Cardiac Life Support Technician, Cardiac Catheter Lab Technician, or other healthcare settings.

Note
- Transfer of credits will be evaluated on a case-by-case basis only.
- Graduates of the Paramedic technical diploma who complete the following courses with a "B" or better, meet the program benchmark scores for the Nursing-Associate Degree program, AND successfully complete the General Studies courses for the Nursing-Associate Degree program may apply to that program for advanced standing:

- 10-543-127, Paramedic to ADN Theory 1, 3 cr.
- 10-543-128, Paramedic to ADN Theory 2, 3 cr.
- 10-543-129, Paramedic to ADN Clinical, 2 cr.
- 10-543-130, Paramedic to ADN Skills, 2 cr.

Refer to the program information for Nursing-Associate Degree on this website for benchmark scores and required General Studies courses.

- Graduates of the Paramedic technical diploma who complete their coursework with a "C" or better and meet the program benchmark scores for the Fire Medic program, may qualify for advance standing within the Fire Medic Associate Degree program.

Curriculum
Students following the study plan below will complete the Paramedic technical diploma in the number of semesters shown.

FIRST SEMESTER	CREDITS
*10-531-911 EMS Fundamentals	2
*10-531-912 Paramedic Medical Principles	4
*10-531-913 Adv. Patient Asses. Principles	3
*10-531-914 Adv.†Pre-Hospital Pharmacology	3
*10-531-915 Paramedic Respiratory Mgt.	2
*10-531-916 Paramedic Cardiology	4
*10-531-917 Paramedic Clinical/Field 1	3
*10-531-918 Adv. Emergency Resuscitation	1
SEMESTER TOTAL	22

SECOND SEMESTER	
*10-531-919 Paramedic Medical Emergencies	4
*10-531-920 Paramedic Trauma	3
*10-531-921 Special Patient Populations	3
*10-531-922 EMS Operations	1
*10-531-923 Paramedic Capstone	1
*10-531-924 Paramedic Clinical/Field 2	4
SEMESTER TOTAL	16
TOTAL CREDITS	38

CURRICULUM NOTE
*No final grade lower than a ¡C¡ is acceptable in any courses. A student who withdraws or receives a grade lower than a ¡C¡ in a program course may apply for re-entry into the program.

Students who enter the program with limited Emergency Medical Service experience will be strongly encouraged to complete 10-531-103, EMS Field Internship (72 clinical hours).

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-531-911 EMS FUNDAMENTALS ...this course provides the paramedic student with comprehensive knowledge of EMS systems, safety, well-being, legal issues, and ethical issues, with the intended outcome of improving the health of EMS personnel, patients, and the community. The students will obtain fundamental knowledge of public health principles and epidemiology as related to public health emergencies, health promotion, and illness/injury prevention. Introducing students to comprehensive anatomical and medical terminology and abbreviations will foster the development of effective written and oral communications with colleagues and other health care professionals. (Prerequisites: Acceptance in the Paramedic or Fire Medic program; completion of Health Assessment; Corequisites: all 10-531-XXX courses in the current semester)

10-531-912 PARAMEDIC MEDICAL PRINCIPLES ...this course addresses the complex depth of anatomy, physiology, and pathophysiology of major human systems while also introducing the paramedic students to the topics of shock, immunology, and bleeding. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-913 ADVANCED PATIENT ASSESSMENT PRINCIPLES ...this course teaches the paramedic student to integrate scene and patient assessment findings with knowledge of epidemiology and pathophysiology to form a field impression. By utilizing a structured and organized assessment process with knowledge of anatomy, physiology, pathophysiology, life span development, and changes that occur to the human body with time, the students will learn to develop a list of differential diagnoses through clinical reasoning, along with the ability to modify the assessment as necessary to formulate a treatment plan for their patients. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-914 ADVANCED PRE-HOSPITAL PHARMACOLOGY ...this course provides the paramedic student with the comprehensive knowledge of pharmacology required to formulate and administer a pharmacological treatment plan intended to mitigate emergencies and improve the overall health of the patient. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-915 PARAMEDIC RESPIRATORY MANAGEMENT...this course teaches the paramedic student to integrate complex knowledge of anatomy, physiology, and pathophysiology into the assessment to develop and implement a treatment plan with the goal of assuring a patient airway, adequate mechanical ventilation, and respiration for patients of all ages. Specific knowledge pertaining to the respiratory system is also provided to ensure the student is prepared to formulate a field impression and implement a comprehensive treatment plan for a patient with a respiratory complaint. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-916 PARAMEDIC CARDIOLOGY ...this course teaches the paramedic student to integrate assessment findings with principles of cardiovascular anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a cardiovascular complaint. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-917 PARAMEDIC CLINICAL/FIELD 1 ...this course provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of instructors or approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. (Corequisites: all 10-531-XXX courses in the current semester)

10-531-917 ADVANCED EMERGENCY RESUSCITATION ...by teaching Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS) methodologies and protocols, this course prepares the paramedic student in the integration of comprehensive knowledge of causes and pathophysiology into the management of shock, respiratory failure, respiratory arrest, cardiac arrest, and peri-arrest states with an emphasis on early intervention to prevent respiratory and/or cardiac arrest if possible. (Corequisites: all 10-531-XXX courses in current semester)

10-531-919 PARAMEDIC MEDICAL EMERGENCIES ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for a patient with a medical complaint. (Prerequisites: completion of prior semester coursework; Corequisites: all 10-531-XXX courses in current semester)

10-531-919 PARAMEDIC TRAUMA ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for an acutely injured patient. (Corequisites: all 10-531-XXX courses in current semester)

10-531-921 SPECIAL PATIENT POPULATIONS ...this course teaches the paramedic student to integrate assessment findings with principles of anatomy, physiology, epidemiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment plan for patients with special needs. Gynecological emergencies, along with special considerations in trauma are also included within this course. (Corequisites: all 10-531-XXX courses in current semester)

10-531-922 EMS OPERATIONS ...this course provides the paramedic student with the knowledge of operational roles and responsibilities to ensure patient, public, and EMS personnel safety. (Corequisites: all 10-531-XXX courses in current semester)

10-531-923 PARAMEDIC CAPSTONE ...this course provides students with a final opportunity to incorporate their cognitive knowledge and psychomotor skills through labs and scenario-based practice and evaluations prior to taking the National Registry written and practical examinations. Technical skills attainment (TSA) for each student will be compiled and/or documented within this course as required by the DHS-approved paramedic curriculum. (Corequisites: all 10-531-XXX courses in current semester)

10-531-924 PARAMEDIC CLINICAL/FIELD 2 ...this course provides the student with the opportunity to enhance his or her learning through the practice of paramedicine in field and health care environment experiences with actual patients under the supervision of instructors or approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. Successful completion of this course requires the student to meet all clinical and field competency requirements at the paramedic level as defined by WI DHS EMS. (Corequisites: all 10-531-XXX courses in current semester)

Pharmacy Technician   Program Code 315361 | Technical Diploma

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Lakeshore Technical College.

Program Description

If you're ill or injured, you have access to an enormous variety of therapeutic medications, and you trust your pharmacy to correctly interpret and fill your prescriptions. Pharmacy technicians contribute to our safety by assisting pharmacists in a variety of technical tasks. If you're attentive to detail, organized, a good communicator, and like math, science, and working with people, a career as a pharmacy technician may be your prescription for success.

Program Outcomes

- Package and label drugs for prescription dispensing.
- Prepare and deliver unit dose to the nursing services of hospitals or nursing homes.
- Prepare parenteral admixtures under aseptic and sterile conditions.
- Receive and inventory drug shipments.
- Maintain records, including drug shipments.
- Facilitate communications for third-party reimbursement.
- Compound solutions, ointments, lotions, suppositories, and other medications.
- Comprehend and utilize medical and drug terminology common to the pharmaceutical environment.
- Practice ethical standards and recognize legal implications of your actions as they relate to yourself, the pharmacist, and the pharmacy.

Employment Potential

Home IV Specialist

Pharmacy Technician employed at:
- Community Pharmacies
- Hospital Pharmacies
- Nursing Home Pharmacies

About Shared Programs

LTC offers its Pharmacy Technician program in cooperation with technical colleges across the state. As a pharmacy technician student, you'll:

- Attend live, interactive TV classes sent from LTC to your local technical college.
- Receive laboratory training in local pharmacies.
- Participate in real-world, hands-on training during a 4-week clinical program.
- Take general studies classes at your local technical college.

Requirements for Program Entry

- Application
- Application Fee
- Entrance Assessment Scores
- Transcripts
- Background Check
- Program Advising Session
- Health/TB/Tetanus Form
- Signature Page Form Student Program Handbook
- Functional Abilities Statement of Understanding Form

Note

Graduation Requirements

Students must attain a "C" or better in all required classes and maintain a grade point average of 2.0 or above to be eligible for graduation.

Curriculum

The Pharmacy Technician Technical Diploma is a two-semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students attend ITV classes sent from LTC to NWTC. Upon graduation, a student will have completed 36 credits.

FIRST SEMESTER		CREDITS
10-501-101	Medical Terminology	3
10-501-102	Health Insurance & Reimburse	3
10-536-110	Pharmaceutical Calculations	3
10-536-113	Pharmacy Business Apps	3
10-536-115	Pharmacy Law	2
10-536-120	Fundamentals of Reading Prescr	1
10-536-122	Pharmacology	3
SEMESTER TOTAL		**18**

SECOND SEMESTER		
10-536-125	Pharmacy Drug Distribution	2
10-536-126	Pharmacy Parenteral Admixtures	3
10-536-139	Pharmacy Community Clinical	3
10-536-141	Pharmacy Computer Lab	2
10-536-143	Pharmacy Hospital Clinical	2
10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**18**
TOTAL CREDITS		**36**

CURRICULUM NOTE

- Program start dates vary; check with your counselor for details.
- Curriculum and program acceptance requirements are subject to change.

Functional Abilities

Functional abilities are the basic duties that a student must be able to perform with or without reasonable accommodations. At the postsecondary level, students must meet these requirements, and they cannot be modified.

Placement Scores

Accuplacer/ACT scores will be used to develop your educational plan. Please contact your program counselor/advisor at 920-693-1109.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-501-102 HEALTH INSURANCE AND REIMBURSEMENT ...introduces the learner to federal, state, and private health insurance plans and managed care systems; and surveys the coding, submission and processing cycle of claims, as well as reimbursement methods used by payers. It provides application of information to ambulatory settings, pharmacies, hospitals, and long term care.

10-536-110 PHARMACEUTICAL CALCULATIONS ...prepares the learner to enlarge and reduce formulas and solve proportions, dilutions, allegations, and other calculations pertinent to the preparation of pharmaceuticals using metric, apothecary, avoirdupois, and household measuring systems. (Condition: 315361 Pharmacy Technician Admission Requirements Met)

10-536-113 PHARMACY BUSINESS APPLICATIONS ...prepares the learner to utilize pharmaceutical business terminology, procedures, customer service, record keeping, purchasing procedures, inventory control systems, pricing, merchandising, reference materials, ethics, roles, responsibilities, and relationships with patients and coworkers. (Condition: 315361 Pharmacy Technician program requirements met)

10-536-115 PHARMACY LAW ...introduces the learner to federal and state regulations that apply to pharmacy practice. (Condition: 315361Pharmacy Technician Admissions Requirements Met)

10-536-120 FUNDAMENTALS OF READING PRESCRIPTIONS ...prepares the learner to work in a community or hospital pharmacy by exploring the role of a pharmacy technician within the healthcare team; examining each step in the prescription filling process; and identifying the top 200 drugs by brand and generic name and therapeutic class. (Condition: 315361Pharmacy Technician Admissions Requirements Met)

10-536-122 PHARMACOLOGY ...appropriately in the pharmacy by learning how drugs work through examination of the anatomy, physiology, pathophysiology, and drug therapy for each of the major systems. (Condition: 315361Pharmacy Technician Admissions Requirements Met)

10-536-125 PHARMACY DRUG DISTRIBUTION SYSTEMS ...is an introductory study of the basic drug distribution systems used in community and institutional pharmacy, including automation technology, pharmacist and pharmacy technician roles, and dispensing considerations. (Condition: 315361 Pharmacy Technician Admissions Requirements Met)

10-536-126 PHARMACY PARENTERAL ADMIXTURES ...provides the learner with the skills to utilize aseptic technique in vertical and horizontal laminar flow hoods for preparation of solutions and medications to be administered intravenously, intramuscularly, subcutaneously, and intradermally to patients. (Prerequisite: 10-536-110, Pharmacy Calculations or 10-536-183, Calculations for Working Pharmacy Technicians and Condition: 315361 Pharmacy Technician Admissions Requirements Met)

10-536-139 PHARMACY COMMUNITY CLINICAL ...provides hands-on experience in a community pharmacy for 108 hours during quarter two. Areas of instruction include interpretation of prescriptions, entering prescriptions on computer, patient profiles, correctly filling and labeling prescriptions, billing patient and third parties, customer service, over-the-counter medications, purchasing, checking in deliveries, and inventory control, compounding and patient confidentiality. (Prerequisites: 10-536-110 Pharmaceutical Calculations; 10-536-120, Fund of Reading Prescriptions; 10-501-102, Health Insurance & Reimbursement; 10-536-112, Pharmacy Business Applications; Condition: 315361, Pharmacy Technician program requirements met)

10-536-141 PHARMACY COMPUTER LAB ...expands the learner's ability to enter prescription orders and familiarizes learner with a variety of pharmacy software features, including updating pharmacy data bases, running reports, and billing. This course is offered in a self-paced format. (Prerequisite: 10-536-120, Fundamentals of Reading Prescriptions; Condition: 315361 Pharmacy Technician Admissions Requirements Met)

10-536-143 PHARMACY HOSPITAL CLINICAL ...provides the learner with the skills to prepare parenteral admixtures, fill medication carts and unit-dose drawers, control inventory, package medications, and maintain patient records in the hospital setting. (Prerequisites: 10-536-139, Pharmacy Community Clinical; 10-536-110, Pharmacy Calculations; Corequisites: 10-536-126, Pharmacy Parenteral Admixtures; 10-536-141, Pharmacy Computer Lab; Condition: 315361, Pharmacy Technician Admissions Requirements Met)

Photography   Program Code 312031 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Digital Photography program is
designed to equip graduates for success
as an entrepreneur, an employee in a
photography studio or in a corporate
setting. The program will help students
develop an individual style, give students
hands-on experience with the latest digital
technologies and help students acquire
business skills necessary to succeed. In
addition to camera operations, the students
will learn digital workflow, perform
advanced image editing techniques, and
obtain experience in photography specialty
areas. Graduates will also be able to apply
their skills in event photography, fine art
photography, and photojournalism.

Program Outcomes

- Operate a Macintosh computer.
- Capture professional digital still images.
- Critique and effectively
  communicate with images.
- Construct and direct a
  professional photo shoot.
- Set up and operate professional
  digital, still and video cameras.
- Edit images effectively and efficiently.
- Edit images at a professional level
  with commercial quality.
- Plan and present a business plan.
- Manage finances for a small business.
- Rate, organize, and archive
  image and data files.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent.
  (For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.)
- Computer familiarity and ability
  to use a keyboard and mouse.
- Students should have mastered basic
  math skills (whole numbers, fractions,
  decimals, percents, measurements).
- As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program As a requirement
  for program entry, an Academic Skills
  Assessment (Accuplacer) with appropriate
  benchmark scores is necessary. Program
  benchmarks are Arithmetic, 65; Reading
  Comprehension, 55: Sentence Skills, 75.
  Students not meeting these benchmarks
  or the equivalent will be required to
  establish an individualized academic plan.
  Students may have the opportunity to
  enroll in selected program core courses
  while completing their individualized
  plan. Upon completion of the plan,
  students will be eligible for all program
  courses. However, higher test scores will
  lead to greater success in core program
  courses. To learn more about these
  assessments and program benchmark
  scores, please contact a counselor at
  (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will
have the potential for employment
in the following areas:

Portrait Photographer

Wedding Photographer

Photojournalist

Nature Photographer

Sports Photographer

Event Photographer

Commercial Photographer

Digital Imaging Specialist

Video Production Crew

Freelance Photographer: initiates
entrepreneurial work with self-established
client base. Carries out assignments under
direct contract with clients including image
capture, editing, and final production.
Coordinate appointments. Specializes
in one or two areas listed above.

The following certificates/technical diplomas
may be applied toward this program:

- 902031, Digital Photography Certificate
- 902032, Digital Photography-
  Advanced Certificate

Curriculum

Students following the study plan
below will complete the Digital
Photography technical diploma in
the number of semesters shown.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-145-185	Organizing Your Small Business	3
10-203-104	Photography-Digital	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**14**

SECOND SEMESTER		
10-104-119	Social Media Marketing	3
10-203-120	Photography-Landscape/Nature	1
10-203-122	Photography-Sports/Events	1
10-203-125	Photography-Night/Low Light	1
10-203-178	Photography-Digital Advanced	3
10-203-180	Photography-Digital Workflow	3
10-203-187	Photography-Digital Editing	3
SEMESTER TOTAL		**15**

THIRD SEMESTER		
10-145-189	Writing a Business Plan-Sm Bus	3
10-203-100	Photography-Career Preparation	1
10-203-121	Photography-Portrait	1
10-203-123	Photography-Commercial	1
10-203-124	Photography-Wedding	1
10-203-126	Photography-DSLR Video	1
10-203-127	Photography-Print & Color Mgmt	1
10-203-189	Photography-Digital Editing Ad	3
SEMESTER TOTAL		**12**
TOTAL CREDITS		**41**

CURRICULUM NOTE

*The credit for 10-890-101, College 101
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

**10-104-119 SOCIAL MEDIA
MARKETING** ...understand the social
media revolution. This course will provide
students with the practical knowledge
and insights needed to successfully
plan, implement, manage and measure
social media marketing efforts.

**10-111-101 MACINTOSH-IMAGE
EDITING** ...(Adobe Photoshop +
Adobe Acrobat) scanning, editing,
color correcting and creating composite
montage photographs. Prepare images
for publication in print. An introduction
to manipulating bitmap images.

**10-203-100 PHOTOGRAPHY-CAREER
PREPARATION** ...present a business
plan, pricing structure and portfolio,
design business documents and marketing
materials, setup computer business
files and digital image file structures,
explore job opportunities and create
application materials. (Prerequisite: 10-
203-178 Photography-Digital Advanced;
Corequisites: 10-145-189 Writing
a Business Plan-Small Business)

10-203-104 PHOTOGRAPHY-DIGITAL
...capturing digital images, exposure,
shutter speed, aperture, composition,
camera operations, lenses, lighting, camera
accessories, types of photography, photo
challenges, importing, editing and storing
images. Access to a digital camera required.

**10-203-120 PHOTOGRAPHY-
LANDSCAPE AND NATURE**
...photograph landscapes, wildlife, plant,
waterways, close-ups of natural scenes
and textures emphasizing aesthetic value.
Techniques involved depth-of-field,
shutter speed, lenses, lighting, HDR,
editing. Topics include equipment, focal
length, and ethics. You must have access
to an SLR digital camera. (Prerequisite:
10-203-104, Photography Digital)

10-203-121 PHOTOGRAPHY-PORTRAIT
...photograph individuals, couples, and
groups of all ages. Techniques and topics
include lighting, flattering posing, directing
subjects, portraiture styles. You must have
access to an SLR digital camera. (Prerequisite:
10-203-178, Digital Photography Advanced)

**10-203-122 PHOTOGRAPHY-SPORTS
AND EVENTS** ...photograph a variety of
sports and events for editorial and advertising
purposes. Techniques involved aperture,
shutter speed, lighting, focal lengths,
bursting. Topics include equipment, location,
storytelling, photojournalism, vernacular
photography, etiquette. You must have access
to an SLR digital camera. (Prerequisite:
10-203-104, Photography Digital)

**10-203-123 PHOTOGRAPHY-
COMMERCIAL** ...photograph consumer
products to meet layout specifications
for promotions and publications.
Techniques include set design, lighting
three-dimensional objects. Topics include
tabletop photography, food, and digital
enhancement. You must have access to an
SLR digital camera. (Prerequisite: 10-203-
178, Digital Photography Advanced)

10-203-124 PHOTOGRAPHY-WEDDING
...photograph weddings in a digital world.
Techniques include lighting, posing,
photographic elements, traditional versus
photojournalistic. Topics include equipment,
indoor and outdoor locations, wedding
day workflow, etiquette, and post-even
workflow. You must have access to an
SLR digital camera. (Prerequisite: 10-203-
178, Digital Photography Advanced)

**10-203-125 PHOTOGRAPHY-NIGHT
AND LOW LIGHT** ...photograph outdoor
and indoor low-light situations and at
night, including start trails, painting with
light, street scenes, fireworks, parties,
lightning. Techniques involved filters,
exposure, color temperature, editing,
and special effects. You must have access
to an SLR digital camera. (Prerequisite:
10-203-104, Photography Digital)

**10-203-126 PHOTOGRAPHY-DSLR
VIDEO** ...video resolution and frame
rates, DSLR video camera functions,
achieving correct exposure and white
balance, achieving good audio, composition
and story development, video editing,
creating a movie, movie delivery formats.

**10-203-127 PHOTOGRAPHY-PRINT
& COLOR MGMT** ...visual and
digital color, gamut and color spaces,
calibration and profiling techniques, color
management workflow for photographers,
choosing a printer, paper, printing labs,
preparing and printing images.

**10-203-178 PHOTOGRAPHY-DIGITAL
ADVANCED** ...advanced camera operations,
lighting techniques, portraiture and
posing, post editing production, location
and studio photography, critique images,
web based portfolio. You must have access
to an SLR digital camera. (Prerequisite:
10-203-104 Photography-Digital)

**10-203-180 PHOTOGRAPHY-DIGITAL
WORKFLOW** ...(Apple Aperture) photo
editing, image retouching, proofing,
publishing, archiving. Techniques for
sorting, ranking, organizing images,
display images for client review, apply
metadata, keep up-to-date online
portfolio, color manage your workflow.

**10-203-187 PHOTOGRAPHY-DIGITAL
EDITING** ...(Adobe Photoshop) digital
editing through advanced tool usage
and masking. Non-destructive editing
through RAW and smart objects. Color
adjustments, advanced retouching,
automation, photorealism, creating reusable
presets/compositions. (Prerequisite: 10-
111-101 Macintosh Image Editing)

**10-203-189 PHOTOGRAPHY-DIGITAL
EDITING ADVANCED** ...this course
will cover advanced functions of Adobe
Photoshop image editing. (Prerequisite:
10-203-187, Photography-Digital Editing)

Physical Therapist Assistant Program Code 105241 | Associate Degree

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description
The Physical Therapist Assistant program educates students to carry out patients' rehabilitation programs under the supervision of a licensed physical therapist.

Program Outcomes
- Demonstrate effective communication with patients, families, and health care team.
- Exhibit behaviors and conduct that reflect respect and sensitivity according to physical therapy practice standards.
- Function under the supervision of a physical therapist in a safe, legal, ethical manner.
- Produce documentation to support the delivery of physical therapy services.
- Demonstrate critical thinking skills to implement and adjust a plan of care under the direction and supervision of a physical therapist.
- Perform technically competent data collection under the direction and supervision of the physical therapist.
- Perform technically competent physical therapy interventions under the direction and supervision of the physical therapist.
- Educate patients, families, and other health providers.
- Integrate components of administrative, operational, and fiscal practices of physical therapy service in a variety of settings.
- Implement a self-directed plan for career development, credentialing, and lifelong learning.

Wisconsin Caregiver Law
NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential
A graduate of this program will have the potential for employment as a Physical Therapist Assistant. The State of Wisconsin does require a license to practice as a physical therapist assistant.

Physical Therapist Assistant: assists the physical therapist in the provision of physical therapy, performs physical therapy interventions and related tasks, carries out operational functions, makes modifications within the scope of the established plan of care, performs documentation and assessments under the direction and supervision of a physical therapist.

Clinical Experience
- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances and participate in weekend rotations.
- Students are required to complete an American Heart Association Health Care Provider CPR course prior to clinical experiences. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Students will be required to show proof of an annual flu vaccine.
- Students may be required to complete drug testing and/or finger printing by clinical agencies.

Accreditation
The Physical Therapist Assistant Program at Northeast Wisconsin Technical College is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) 1111 North Fairfax Street, Alexandria, VA 22314 Telephone: 703-706-3245 Email: accreditation@apta.org Website: http://www.capteonline.org

Board/Certification Examinations
Graduates are eligible to take the Physical Therapist Assistant Examination through the National Physical Therapy Examination (NPTE).

Requirements for Program Application
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admissions Assessment or equivalent or ACT assessment taken with the last five years. (For a list of equivalents, please contact a Counselor.)
- Two semesters High School, or one semester in College of: Algebra and Chemistry (with a lab component). All required course grades must be completed with a "C" or better.

Requirements for Program Entry
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 90; Reading Comprehension, 90; Sentence Skills, 95; Algebra, 65. ACT benchmarks are Math, 18; Reading, 21; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory spring program orientation.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete 16 hours of mandatory job shadow time within rehab settings.
- Complete a Functional Abilities Inventory.

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-524-138 PTA KINESIOLOGY 1...introduces basic principles of musculoskeletal anatomy, kinematics, and clinical assessment. Students locate and identify muscles, joints, and other landmarks of the lower quadrant in addition to assessing range of motion and strength. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-139 PTA PATIENT INTERVENTIONS...an introduction to basic skills and physical therapy interventions performed by the physical therapist assistant. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-140 PTA PROFESSIONAL ISSUES 1...introduces the history and development of the physical therapy program, legal and ethical issues, the interdisciplinary health care team, and professional communication skills. (Prerequisite: Admission to the Physical Therapist Assistant program)

10-524-141 PTA KINESIOLOGY 2...applies basic principles from PTA Kinesiology 1 to the axial skeleton and upper quadrant including location and identification of muscles, joints and other landmarks. Integrate analysis of posture and gait. (Prerequisite: 10-524-138, PTA Kinesiology 1)

10-524-142 PTA THERAPEUTIC EXERCISE...provides instruction on the implementation of a variety of therapeutic exercise principles. Learners implement, educate, adapt, and assess responses to therapeutic exercises. (Prerequisites: 10-806-177, General Anatomy & Physiology; 10-524-138, PTA Kinesiology 1)

10-524-143 PTA THERAPEUTIC MODALITIES...develops the knowledge and technical skills necessary to perform numerous therapeutic modalities likely to be utilized as a PTA. (Prerequisites: Admission to the Physical Therapist Assistant program; 10-524-139, PTA Patient Interventions)

10-524-144 PTA PRINCIPLES OF NEUROMUSCULAR REHAB...integrates concepts of neuromuscular pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-142, PTA Therapeutic Exercise; 10-524-141, PTA Kinesiology 2; 10-524-139, PTA Patient Interventions; 10-524-155, PTA-Pediatrics)

10-524-145 PTA MUSCULO REHAB...integrates concepts of musculoskeletal pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-142, PTA Therapeutic Exercise; 10-524-141, PTA Kinesiology 2; 10-524-139, PTA Patient Interventions; 10-524-155, PTA-Pediatrics)

10-524-146 PTA MANAGEMENT OF CARDIOPULMONARY & INTEGUMENTARY CONDITIONS...integrates concepts of cardiopulmonary and integumentary pathologies, physical therapy interventions, and data collection in patient treatment. (Prerequisites: 10-524-139 PTA Patient Interventions; 10-524-142 PTA Therapeutic Exercise; 10-524-141 PTA Kinesiology 2; 10-524-155, PTA-Pediatrics)

10-524-147 PTA CLINICAL PRACTICE 1...provides a part-time clinical experience to apply foundational elements, knowledge, and technical skills pertinent to physical therapy practice. (Prerequisites: 10-524-144 PTA Principles of Neuromuscular Rehab; 10-524-145 PTA Principles of Musculoskeletal Rehab; 10-524-146 PTA Management of Cardiopulmonary & Integumentary Conditions, Corequisites: 10-524-148 PTA Clinical Practice 2, 10-524-151 PTA Clinical Practice 3)

10-524-148 PTA CLINICAL PRACTICE 2...provides another part-time clinical experience to apply foundational elements, knowledge, and technical skills required of the entry level physical therapist assistant in various practice settings. (Corequisite: 10-524-147, PTA Clinical Practice 1, 10-524-151 PTA Clinical Practice 3)

10-524-149 PTA REHABILITATION ACROSS THE LIFESPAN...a capstone course that integrates concepts of pathology, physical therapy interventions and data collection across the lifespan. The PTA's role in health, and physical therapy interventions for special patient populations. (Prerequisites: 10-524-144, PTA Principles of Neuromuscular Rehab; 10-524-145, PTA Principles of Musculoskeletal Rehab; 10-524-146, PTA Management of Cardiopulmonary & Integumentary Conditions; Corequisite: 10-524-148, PTA Clinical Practice 2)

10-524-150 PTA PROFESSIONAL ISSUES 2...incorporates professional development, advanced legal and ethical issues, healthcare management and administration, and further development of professional communication strategies. (Prerequisite: 10-524-140, PTA Professional Issues 1; Corequisite: 10-524-148, PTA Clinical Practice 2)

10-524-151 PTA CLINICAL PRACTICE 3...provides a full-time clinical experience to apply foundational elements, knowledge, and technical skills required of the entry level physical therapist assistant in various practice settings. (Prerequisites: 10-524-144, PTA Principles of Neuromuscular Rehab; 10-524-145, PTA Principles of Musculoskeletal Rehab; 10-524-146, PTA Management of Cardiopulmonary & Integumentary Conditions; Corequisites: 10-524-147 PTA Clinical Practice 1, 10-524-148, PTA Clinical Practice 2)

10-524-155 PTA PEDIATRICS...normal and abnormal human development, pediatric pathologies and dysfunctions, and physical therapy treatment approaches. (Prerequisites: 10-524-141, PTA Kinesiology 2; 10-524-142, PTA Therapeutic Exercise; 10-524-143, PTA Therapeutic Modalities)

Practical Nursing
Program Code 315431 | Technical Diploma

Offered at the Green Bay, Marinette and Sturgeon Bay campuses and at the West Regional Learning Center-Shawano. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. For information in Shawano: (715) 524-2418. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Practical Nursing graduates work in hospitals, nursing homes, clinics, community health agencies, and private homes. They give bedside care to patients whose conditions are relatively stable and assist the Registered Nurse or doctor in the care of the acutely ill person.

Program Outcomes

- Implement one's role as a nurse in ways that reflect integrity, responsibility, ethical practices, and an evolving identity as a nurse committed to caring, advocacy, and quality care while adhering to evidence-based practice.

- Demonstrate appropriate written, verbal, and nonverbal communication in a variety of clinical contexts.

- Integrate knowledge of social, mathematical, and physical sciences, pharmacology, and disease processes while participating in clinical decision making.

- Provide patient centered care under supervision by participating in the nursing process across diverse populations and healthcare settings.

- Minimize risk of harm to patients, members of the healthcare team, and self through safe individual performance and participation in system effectiveness.

- Collaborate as an active member of the multidisciplinary health care team to provide effective patient care throughout the lifespan.

- Use information and technology to communicate, manage data, mitigate error, and assist with decision-making.

Requirements for Program Entry

- Attend mandatory orientation.
- Submit required immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card to comply with affiliating agency requirements. Recommend taking between program orientation and program start.
- All students must successfully complete

a DHS approved Nursing Assistant course prior to program entry.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Licensed Practical Nurse: administers care to individuals whose conditions are relatively stable; administers care to the acutely ill under the direct supervision of an RN or MD; teaches basic hygiene, nutrition, and aspects of good health; administers first aid; and assists with health assessment and basic health teaching in a variety of settings under the supervision of an RN or MD.

Health Insurance Claims Approver: processes insurance claims on a computer terminal.

Clinical Experience

- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.
- Students will be required to show proof of annual flu vaccine.

Accreditation

The Practical Nursing program is accredited by:
Wisconsin Department of Safety and Professional Services
Dept of Regulation & Licensing
1400 East Washington Street
PO Box 8935
Madison WI 53708-8935
(608) 266-2112

Board/Certification Examinations

Graduates of the program are eligible to take the NCLEX-PN Examination for licensure as a Licensed Practical (LPN).

Flexible Learning Option

A part-time program format is available.

This option is scheduled over five semesters including two summer semesters. Each semester has five to eight credits.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 80; Reading Comprehension, 78; Sentence Skills, 90. ACT benchmarks are Math, 18; Reading, 16; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-543-301 NURSING FUNDAMENTALS ...focuses on basic nursing concepts to provide evidenced-based care to diverse patient populations across the lifespan. Current and historical issues impacting nursing will be explored within the scope of nursing practice. The nursing process will be introduced as a framework for organizing the care of patients. (Prerequisites: Accepted into Practical Nursing Program; 10-801-136, English Composition 1; 31-806-312, Anatomy Structure/Function; Corequisites: 10-809-188, Developmental Psych; 31-543-303, Nursing Pharmacology)

31-543-302 NURSING SKILLS ...focuses on development of evidence-based clinical skills and physical assessment across the lifespan. Content includes mathematical calculations and conversions related to clinical skills. In addition the course includes techniques related to obtaining a health history and basic physical assessment skills using a body systems approach. (Prerequisites: Accepted into Practical Nursing Program; 10-801-136, English Composition 1; 31-806-312, Anatomy Structure/Function; Corequisites: 10-809-188, Developmental Psych; 31-543-303, Nursing Pharmacology; 31-543-101, Nursing Fundamentals; 31-543-304, Intro to Clinical Practice)

31-543-303 NURSING PHARMACOLOGY ...this course introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisites: Accepted into Practical Nursing Program; 10-801-136, English Composition 1; 31-806-312, Anatomy Structure/Function; Corequisites: 31-543-301, Nursing Fundamentals; 10-809-188, Developmental Psych)

31-543-304 NSG: INTRO TO CLINICAL PRACTICE ...this introductory clinical course emphasizes basic nursing skills and application of the nursing process in meeting the needs of diverse clients across the lifespan. Emphasis is placed on performing basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisites: Accepted into Practical Nursing Program; 10-801-136, English Composition 1; 31-806-312, Anatomy Structure/Function; Corequisites: 10-809-188, Developmental Psych; 31-543-303, Nursing Pharmacology; 31-543-101, Nursing Fundamentals; 31-543-302, Nursing Skills)

31-543-305 NURSING HEALTH ALTERATIONS ... elaborates upon the basic concepts of health and illness as presented in Nursing Fundamentals. It applies theories of nursing in the care of patients through the lifespan, utilizing problem solving and critical thinking. This course will provide an opportunity to study conditions affecting different body systems and apply evidence-based nursing interventions. It will also introduce concepts of leadership and management.(Prerequisites: 10-809-188, Developmental Psych; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology; 31-543-304, Intro to Clinical Practice; Corequisites: 10-801-196, Oral/Interpersonal Communication; 31-543-306, Health Promotions; 31-543-307, Nursing: Clinical Care Across Lifespan; 31-543-308, Intro to Clinical Care Management)

31-543-306 NURSING HEALTH PROMOTION ...this course focuses on topics related to health promotion for individuals and families throughout the lifespan. We will cover nursing care of the developing family, which includes reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. Recognizing the spectrum of healthy families we will discern patterns associated with adaptive and maladaptive behaviors applying mental health principles. An emphasis is placed on teaching and supporting healthy lifestyles choices for individuals of all ages. Nutrition, exercise, stress management, empowerment, and risk reduction practices are highlighted. Study of the family will cover dynamics, functions, discipline styles, and stages of development. (Prerequisites: 10-809-188, Developmental Psych; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology; 31-543-304, Intro to Clinical Practice; Corequisites: 10-801-196, Oral/Interpersonal Communication; 31-543-307, Nursing: Clinical Care Across Lifespan)

31-543-307 NSG:CLIN CARE ACROSS LIFESPAN ...this clinical experience applies nursing concepts and therapeutic interventions to patients across the lifespan. It also provides an introduction to concepts of teaching and learning. Extended care to include the family is emphasized. (Prerequisites: 10-809-188, Developmental Psych; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology; 31-543-304, Intro to Clinical Practice; Corequisites: 10-801-196, Oral/Interpersonal Communication; 31-543-306, Health Promotions)

31-543-308 NSG: INTRO CLINICAL CARE MGT ...this clinical experience applies nursing concepts and therapeutic nursing interventions to groups of patients across the lifespan. It also provides an introduction to leadership, management, and team building. (Prerequisites: 10-809-188, Developmental Psych; 31-543-301, Nursing Fundamentals; 31-543-302, Nursing Skills; 31-543-303, Nursing Pharmacology; 31-543-304, Intro to Clinical Practice; Corequisites: 10-801-196, Oral/Interpersonal Communication; 31-543-305, Health Alterations; 31-543-306, Health Promotions; 31-543-307, Nursing: Clinical Care Across Lifespan)

31-806-312 ANATOMY/STRUCTURE-FUNCTION ...human body systems, structural formation. (Prerequisite: Accuplacer-Reading=55 OR ACT-Reading =15 OR 10-838-105, Intro to Reading and Study Skills OR equivalent)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Print Technology program trains students in pre-press operations, offset presswork, computer-to-plate imaging, finishing processes, electronic publishing, and digital print applications.

Program Outcomes

- Analyze jobs for operations and materials costs.
- Perform electronic pre-press operations.
- Lay out jobs and generate CTP (computer-to-plate) production.
- Create press proofs.
- Set up and operate digital printing presses.
- Maintain a safe work environment.
- Create machine operation procedures.
- Pre-flight jobs for various printing processes.
- Perform finishing operations on printed jobs.
- Set-up and operate wide format inkjet equipment.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Communication skills.
- Students should have mastered basic math skills (whole numbers, fractions, decimals, percents, measurements).

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Digital Output Operator: produces print communication using digital output devices and computer workflow systems. Manages print quality on full color and monochrome projects.

Offset/Press Operator: sets up, prepares and operates presses; loads paper, installs printing plates, adjusts guides and control for machine operations.

Offset/Press Assistant: prepares press for run; runs press proof; adjusts plate, paper feed, tension of paper; ink and water flow.

Large Format Output Operator: produce large format signage on different substrates.

Bindery/Finishing Operator: operates machines that cut, fold, collate, staple, stitch, trim, and bind pages.

Curriculum

Students following the study plan below will complete the Print Technology technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-111-120	Macintosh Publishing	3
10-111-161	Macintosh Illustration	3
10-204-110	Publishing Technologies	3
10-204-111	Digital Publishing Operations	3
10-804-123	Math w Business Apps	3
*10-890-101	College 101	1
SEMESTER TOTAL		16

SECOND SEMESTER		
10-111-101	Macintosh-Image Editing	3
10-111-125	Graphic Reproduction Tech	3
10-204-124	Variable Data Publishing	3
10-204-126	Digital Print Applications	3
10-204-130	Wide Format Graphics	3
10-801-136	English Composition 1	3
SEMESTER TOTAL		18
TOTAL CREDITS		34

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Graphic Designer
- Pre-Press Technician
- Print Production Supervisor/Manager
- Estimator
- Pre-Flight Specialist
- Customer Service Representative

The following certificates/technical diplomas may be applied toward this program:

- 902042, Digital Print Technology

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images.

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements.

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-120, Macintosh Publishing)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images.

10-204-110 PUBLISHING TECHNOLOGIES ...introduction to printing process, electronic publishing, prepress operations, press operations, postpress operations, job logs, professional portfolios, and job seeking skills. (Corequisite:10-111-120, Macintosh Publishing)

10-204-111 DIGITAL PUBLISHING OPERATIONS ...press equipment, processors, inks, print quality, job tickets, standard operating procedures, densitometers, printing problems, and trapping situations. (Corequisite: 10-204-110, Publishing Technologies)

10-204-124 VARIABLE DATA PUBLISHING ...learn how to link database files to page layout applications. Create and manage correct variable channels in page layouts, apply text and image changes to layout to create a personalized printed page, research how the information is gathered to create personalized content. (Prerequisites: 10-111-120, Macintosh Publishing)

10-204-126 DIGITAL PRINT APPLICATIONS ...explain why the industry is in a state of transition towards digital printing; outline the proper time to select digital printing as a production tool; what type of project fits well into a digital print environment; identify what type of project fits the mold of digital printing. (Prerequisite: 10-204-110, Publishing Technologies; 10-804-123, Math w Business Apps)

10-204-130 WIDE FORMAT GRAPHICS ...successfully set-up and pre-flight electronic files for large format output; accurately produce large format graphics for both indoor and outdoor usage including finishing processes; install vinyl graphics on multiple surfaces. (Prerequisite: 10-204-110 Publishing Technologies)

Prototype & Design
Program Code 106142 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
The Prototype and Design program provides students with a unique combination of hand skills and fabrication techniques, focusing on the construction aspect of the design and engineering process. Students will learn to build a variety of three dimensional prototypes and models for use in product development, manufacturing, consumer products, and other related fields. These professionals may also build three dimensional models used for architectural design, mechanical design, and industrial design. Graduates of the Prototype and Design program are skilled in hand fabrication, high quality painting and finishing, 3D drawing software, CNC machining, RTV mold making, and welding with an emphasis on problem solving, and critical thinking. Career opportunities include product development, prototype model builder, engineering design, architectural model builder, RTV mold maker, rapid prototype technician and pattern maker.

Program Outcomes
- Develop planning strategies necessary to translate two-dimensional information into a three- dimensional prototype.
- Use critical thinking and problem solving techniques in the construction of a prototype.
- Create a variety of computer aided drawings using AutoCAD and SolidWorks.
- Create programs to be used on CNC (computer numerical control) milling machines using Surf CAM software.
- Construct 3D models using a variety of rapid prototyping processes.
- Produce highly detailed and accurate parts using the laser machining center.
- Fabricate silicone rubber molds and rigid molds suitable for casting.
- Build patterns and molds to be used for vacuum forming.
- Create jigs and fixtures necessary for special machining operations.
- Select and apply a variety of industrial finishes on various materials.
- Effectively estimate the time and cost to design and fabricate a prototype.
- Manage computer files and utilize a variety of technically related software.
- Work efficiently as a part of a team, or independently.
- Safely operate all hand tools, metalworking, and woodworking equipment typically used in a professional model shop.
- Effectively select appropriate materials and adhesives and understand their properties.
- Use proper sanding and finishing techniques on various materials.
- Understand various design and engineering processes as they relate to the Prototype & Design Industry.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- High school background in mathematics and science.
- High school algebra or equivalent.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic, 65; Reading Comprehension, 55; Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmarks scores, please contact a counselor at (920) 498-5444 or (888) 385-6982
- Familiar with Microsoft Word and File Management.

Employment Potential
A graduate of this program will have the potential for employment in the following areas:

Product Development: develops and designs new products through the use of prototypes.

Prototype Model Builder: provides research and development on new products, works with molding, and makes models for all types of industries, such as toy and automobile manufacturers, so that the prototype will look like the finished product before production begins.

Engineering Design: translates engineering data and vendor information into scale prototypes or CAD models for use with Rapid Prototyping Processes. Usually employed in design and development of new products or systems.

Architectural Model Builder: translates, to scale, all architectural drawings using plot plans, elevations, sections, and details to construct three dimensional models using a wide variety of materials and processes.

Rapid Prototype Technician: Creates models with the use of rapid prototype technologies.

Pattern and Mold Maker: fabricates wood, plastic, or metal patterns and molds for casting parts.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Mechanical Prototype Designer
- Model Shop Supervisor
- Computer Numerical Control Machinery Programmer/Operator
- Rapid Prototyping Operator
- Architectural Designer/Model Builder
- Freelance Model Builder

Curriculum
Students following the study plan below will compete the Prototype and Design Technician associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-420-151	Prototype Machine Tool	3
10-606-113	CAD	2
10-614-113	2D Essentials	2
10-614-152	Prototyping-Introduction to	5
10-801-196	Oral/Interpersonal Comm	3
10-804-107	College Mathematics	3
*10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-442-153	Prototype Metal Fabrication	2
10-606-162	SolidWorks Fundamentals	1
10-606-163	SolidWorks-Intermediate	1
10-606-166	SolidWorks Loft/Surface	1
10-614-233	Architectural Model Design	4
10-614-235	CNC Mach/2D Prog-Intro	3
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		16

THIRD SEMESTER		
10-614-138	CNC Machining-Adv	3
10-614-234	Molding Process & Techniques	5
10-614-236	Rapid Prototype & Additive Mfg	2
10-614-276	Model Finishing	2
10-801-136	English Composition 1	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18

FOURTH SEMESTER		
10-614-143	Prototyping Solutions Advanced	5
OR		
10-614-139	Prototype & Design Internship	5
10-614-174	Models-Machine	2
10-614-237	Engineering & Mfg Processes	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16
TOTAL CREDITS		69

CURRICULUM NOTE
*The credit for 10-890-101, College 101, is an institutional Requirement for graduation. Consequently, it is not part of the program requirements.

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-420-151 PROTOTYPE MACHINE TOOL ...introduction to machine shop fundamentals using precision measuring instruments; performing machine tool operations on a metal lathe, vertical and horizontal milling machines and surface grinders; and basic foundry applications.

10-442-153 PROTOTYPE METAL FABRICATION...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-119, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-606-162 SOLIDWORKS FUNDAMENTALS ...terminology, software operation and interface, creating basic models, casting and forging models. (Corequisite: 10-606-119, Sketching-Technical OR 10-614-113 2D Essentials; familiarity with Windows file management)

10-606-163 SOLIDWORKS-INTERMEDIATE ...creating and manipulating intermediate models using SolidWorks software. Course content includes models requiring the use of revolved and swept features, equations, and thin walled parts. (Prerequisite: 10-606-162, SolidWorks Fundamentals)

10-606-166 SOLIDWORKS LOFT/SURFACE ...necessary to create and manipulate lofted and surface component parts using SolidWorks software. Course content includes lofting, sweeping complex contours, and surfaces. (Prerequisite: 10-606-163, SolidWorks-Intermediate)

10-614-113 2D ESSENTIALS ... an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning.

10-614-138 CNC MACHINING-ADVANCED ...create three-dimensional prototypes on the CNC machining center using SolidWorks and SurfCAM software with a focus on 3 axis surface machining and multiple part setups and an emphasis on problem solving and critical thinking. (Prerequisites: 10-614-235, Intro to CNC Mach/2D Prog; 10-606-166, SolidWorks Loft/Surface)

10-614-139 PROTOTYPE & DESIGN INTERNSHIP ...an introduction to model building, safety, tools, materials, flexible mold making, casting, limited run production, techniques and practices as on-the-job training.

10-614-143 PROTOTYPING SOLUTIONS ADVANCED ...comprehensive overview of the design and development process using the skills acquired throughout the program to build a team focused project with an emphasis on project management, critical thinking, problem solving, time management and collaboration. (Prerequisite: 10-614-234, Molding Process & Techniques)

10-614-152 PROTOTYPING-INTRODUCTION TO ...introduction to the prototype & design industry using a variety of shop tools and equipment, machine processes, and fabrication techniques with an emphasis on shop safety, hand skills, accuracy, professionalism, and working within specified tolerances to build three dimensional models.

10-614-174 MODELS-MACHINE ...moving models, preliminary through final prototype; plastic mechanisms, motions, characteristics, combinations, mechanical advantages, fits, clearances, threads, gears, levers, cams, motors, fasteners, and methods. (Prerequisite: 10-614-235, Intro to CNC Mach/2D Prog)

10-614-233 ARCHITECTURAL MODEL DESIGN ...planning and construction of architectural models focusing on layout, fabrication, material selection, painting, attention to details, project planning, portfolio creation and presentation. (Prerequisites: 10-614-152, Prototype Introduction to; 10-606-113, CAD)

10-614-234 MOLDING PROCESS & TECHNIQUES ...utilizing proper RTV, plaster, and rigid molding techniques and procedures in the creation of detail replicas; estimating costs and time of projects. (Prerequisite: 10-614-152, Prototyping-Introduction to; 10-606-166, SolidWorks Loft/Surface)

10-614-235 CNC MACH/2D PROGRAM-INTRODUCTION TO ...introduction to CNC machining and programming using computer drawing software such as AutoCAD and SurfCAM, to produce three dimensional models from 2D geometry with an emphasis on machining materials used in the prototype & design industry. (Prerequisites: 10-606-113, CAD; 10-614-152, Prototyping-Introduction to)

10-614-236 RAPID PROTOTYPE & ADDITIVE MANUFACTURING ...research and use of rapid prototyping technologies in the creation of complex 3D models, from SolidWorks or from other sources, overview upcoming technologies in the rapid prototyping field, estimating time and cost of build, finishing FFM/SLS/SLA rapid prototype parts for secondary step, and client/provider relationships. (Prerequisite: 10-614-152 Prototyping-Introduction to; 10-606-166, SolidWorks Loft/Surface)

10-614-237 ENGINEERING & MANUFACTURING PROCESSES ...an introduction into the manufacturing & production environment, illustrating the basic concepts of machine setup and fixture design, pattern making, material selection, thermoforming, die making, short run production molds. (Prerequisite: 10-614-234, Molding Process/Tech; 10-614-138, CNC Machining-Advanced)

10-614-276 MODEL FINISHING ...using a variety of spray guns and air brushes to apply paint products to a number of different surfaces. Proper preparation, sanding, masking, and vinyl stenciling procedures will be covered as well as correct clear coat buffing and polishing.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

Graduates perform medical radiologic procedures using ionizing radiation. They are responsible for quality patient care, adhering to the principles of radiation protection for the patient, self and others, while producing optimal images. They work with patients of all ages and perform radiologic exams in the emergency trama center, surgery, and intensitve care unites, as well as in the imaging deparment. They also assist radiologists during fluoroscopy and with invasive procedures. After completion of the program, students may choose to acquire advanced certificates in Mammography, Bone Densitometry, Interventional Radiography (IR), Computer Tomography (CT), or Magnetic Resonance Imaging (MRI).

Program Outcomes

* Carryout the production and evaluation of radiographic images.
* Practice radiation safety principles.
* Adhere to quality management processes in radiography.
* Provide quality patient care.
* Apply computer skills in the radiographic clinical setting.
* Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics.
* Apply critical thinking and problem solving skills in the practice of diagnostic radiography.

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of the Radiography program can choose to work in a variety of health care settings which includes hospitals, medical clinics, and private physician's offices.

Career advancement opportunities exist in education, administration, and in commercial companies as education/application specialists, sales representatives and technical advisors.

Clinical Experience

* Students will be required to purchase a uniform, radiographic markers, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.

* Students will be required to show proof of an annual flu vaccine.

Accreditation

The Radiography program is accredited by The Joint Review Committee on Education in Radiologic Technology, 20 North Wacker Drive, Suite 2850, Chicago, Illinois 60606-3182, (312) 704-5300

Note
NWTC offers students enrolled in Theda Clark Radiologic Technology Program the opportunity to complete an Associate Degree of Individualized Technical Studies by completing the general education requirements of the Radiography program.

Board/Certification Examinations

Graduates apply to take the American Registry in Radiography Technologist (ARRT) certification examination and upon passing, are credentialed in radiography RT (R) which also makes them eligible for full Wisconsin state license.

Requirements for Program Application

* Completed application and all items listed below.
* As a requirement for program application, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary prior to attending a pre-application informational session. Accuplacer benchmarks are Arithmetic, 90; Reading Comprehension, 90; Sentence Skills, 95; Algebra, 65. ACT benchmarks are Math, 18; Reading, 21; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, applicants may move to the next phase of program application, described below. To learn more about these assessments and program benchmark scores, please contact Admissions at (920) 498-7159 or (888) 385-6982.
* Attendance at a mandatory pre-application informational session will be required. To sign-up for a mandatory pre-application session, please contact Admissions at (920) 498-7159 or (888) 385-6982.
* High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/getting started.)
* Upon completion of the pre-application information session, students will take the Health Educations Systems Inc. (HESI) A2 Exam. The HESI can only be taken after attendance at a pre-application information session. Test topics include Math, Chemistry, Anatomy & Physiology, and Reading. To learn more about these assessment scores, please contact an admissions specialist at (920) 498-7159 or (888) 385-6982, or view the Related Links on the lower right of the Radiography program webpage http://www.nwtc.edu/academics/degrees/health-sciences/Medical/Pages/Radiography.aspx
* Two semesters in High School, or one semester of College Algebra and Chemistry (with a lab component) completed with a grade of "B" or better.
* Candidates submitting applications to the Radiography program must also provide an essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay will follow a question and answer format and will include information related to the following; why they are interested in and their knowledge of the profession, experience in healthcare, specific skills and duties of a radiographer, and characteristics that make them a good candidate for the program.
* The Radiography program follows a competitive enrollment process whereby

candidate applications are reviewed by a ranking process. Candidates are ranked in the following categories: HESI scores and program essay. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will be canceled and have an opportunity to re-apply with the following year's applicants.

Requirements for Program Entry

* Attend mandatory spring program orientation.
* Complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
* Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
* Complete mandatory four hour job shadow.

Suggested Skills for Success

Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

CURRICULUM NOTE
*No final grade lower than "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

++ No final grade lower than "B" is acceptable in General Anatomy & Physiology. A student who withdraws or receives a grade lower than a "B" in this course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101, is an institutional requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-526-149 RADIOGRAPHIC PROCEDURES 1 ...prepares radiography students to perform routine radiologic procedures on various parts of the body including the upper body, hip, pelvis and ankle. Students apply knowledge of human anatomy to position the patient correctly to achieve the desired result. (Prerequisites: Enrolled in Radiography program; 10-806-177, General Anatomy & Physiology)

10-526-158 INTRODUCTION TO RADIOGRAPHY ...introduces students to the role of radiography in health care. Students apply medical terminology, legal and ethical considerations to patient care and pharmacology in the radiologic sciences. (Prerequisite: Enrolled in Radiography program)

10-526-159 RADIOGRAPHIC IMAGING 1 ...introduces radiography students to the process and components of analog imaging. Students determine the factors that affect image quality including contrast, density, detail, and distortion. (Prerequisite: Enrolled in Radiography program)

10-526-168 RADIOGRAPHY CLINICAL 1 ...this beginning level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in the health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisites: Enrolled in Radiography program; 10-806-177, General Anatomy & Physiology; Corequisites: 10-526-158, Introduction to Radiography; 10-526-149, Radiographic Procedures 1; 10-526-159, Radiographic Imaging)

10-526-170 RADIOGRAPHIC IMAGING 2 ...explores film processing components as well as the principles and operation of digital imaging systems found in diagnostic radiology. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within analog and digital systems. Principles of digital system quality assurance and maintenance are presented. (Prerequisites: Enrolled in Radiography program; 10-526-159, Radiographic Imaging 1)

10-526-174 ARRT CERTIFICATION SEMINAR...provides preparation for the national certification examination prepared by the American Registry of Radiologic Technologists. Emphasis is placed on the weak areas of the individual students. Simulated registry examinations are utilized. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-189 RADIOGRAPHIC PATHOLOGY...prepares radiography students to determine the basic radiographic manifestations of pathological conditions. Students classify trauma related to site, complications, and prognosis and locate the radiographic appearance of pathologies (Prerequisite: Enrolled in Radiography program)

10-526-190 RADIOGRAPHY CLINICAL 5 ...this fifth level clinical course prepares radiography students to perform radiologic procedures on patients with some supervision. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-199, Radiography Clinical 4)

10-526-191 RADIOGRAPHIC PROCEDURES 2 ...prepares radiography students to perform routine radiologic procedures on various parts of the body including the skull, spine, and gastrointestinal systems. Students apply knowledge of human anatomy to position the patient correctly to achieve the desired result. (Prerequisites: Enrolled in Radiography program; 10-526-149, Radiographic Procedures 1; 10-806-177, General Anatomy & Physiology)

10-526-192 RADIOGRAPHY CLINICAL 2...this second level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-168, Radiography Clinical 1)

10-526-193 RADIOGRAPHY CLINICAL 3...this third level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the demonstration of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-192, Radiography Clinical 2)

10-526-194 IMAGING EQUIPMENT OPERATION ...introduces radiography students to the principles and application of x-ray technology. Students analyze how x-rays are produced and determine the corrective actions necessary for common equipment malfunctions. (Prerequisite: Enrolled in Radiography program)

10-526-195 RADIOGRAPHIC QUALITY ANALYSIS...prepares radiography students to analyze radiographic images for quality. Students apply quality control tests to determine the causes of image problems including equipment malfunctions and procedural errors (Prerequisite: Enrolled in Radiography program)

10-526-196 MODALITIES...introduces radiography students to imaging modalities with an emphasis in computed tomography and cross-sectional anatomy. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-197 RADIATION PROTECTION & BIOLOGY ...prepares radiography students to protect themselves and others from exposure to radioactivity. Students examine the characteristics of radiation and how radiation affects cell biology. Students apply standards and guidelines for radiation exposure. (Prerequisite: Enrolled in Radiography program or consent of program director)

10-526-198 RADIOGRAPHY CLINICAL 6 ...this final clinical course requires students to integrate and apply all knowledge learned in previous courses to the production of high quality images in the clinical setting. Students apply radiation protection and standard precautions in the production of images in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-190, RT-Clinical Practice 5)

10-526-199 RADIOGRAPHY CLINICAL 4...this fourth level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-193, Radiography Clinical 3)

Respiratory Therapist Program Code 105151 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Respiratory Therapist program
trains students in the evaluation,
diagnosis, treatment, and rehabilitation
of patients with chronic and acute
disease of the heart and lungs.

Program Outcomes

• Apply respiratory therapy concepts
  to patient care situations.
• Practice respiratory therapy
  according to established professional
  and ethical standards.
• Demonstrate technical proficiency
  required to fulfill the role of
  a Respiratory Therapist.

Wisconsin Caregiver Law

NWTC is required to comply with
the Wisconsin Caregiver Law (1997
WISCONSIN ACT 27). The completion of
a caregiver background check includes the
review of criminal records for convictions
of serious crimes or a history of improper
behavior. Students accepted into this
program must complete a background
check through www.CertifiedBackground.
com. Information regarding this process
is provided to students immediately upon
acceptance into the program. Students with
a criminal history may be denied access to
placement at the discretion of the clinical
or practicum site. Consequently, should
a student have a history of convictions of
serious crimes or a history of improper
behaviors, NWTC cannot guarantee
clinical/practicum placement or guarantee
graduation within typical program timing.

Employment Potential

A graduate of this program will have the
potential for employment in a hospital,
nursing home, and homecare setting as a:

• Staff Therapist
• Pulmonary Rehabilitation Therapist
• Perinatal/Pediatric Therapist
• Pulmonary Function Technologist
• Sleep Disorder Center Technician
• Shift Supervisor
• Department Manager
• Home Care Therapist/Manager
• Nursing Home Therapist
• Respiratory Care Educator
• Medical Equipment and Supplies
  Sales Representative

Clinical Experience

• Students will be required to purchase
  a uniform, pay for liability insurance,
  provide their own transportation to
  assigned sites, and cover any expenses
  related to clinical experiences.
  Students may be expected to travel
  distances, participate in p.m.
  clinicals, or weekend rotations.
• Students will be required to show
  proof of an annual flu vaccine.
• Students will be required to submit
  immunization documentation. A fee
  is charged for this service. Additional
  information will be provided upon
  acceptance into the program.
• Students are required to take
  an ACLS Provider course prior
  to the start of Clinical 4.

Accreditation

The Respiratory Therapist program
is accredited by the Committee on
Accreditation for Respiratory Care (CoARC)
1248 Harwood Road
Bedford, TX 76021-4244
(817) 283-2835

Board/Certification Examinations

Graduates are eligible to take the
National Board for Respiratory Care
Credentialing Examinations.

Requirements for Program Application

• Completed application.
• High school transcript or equivalent.
  (For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.)
• Admission Assessment or equivalent
  or ACT assessment taken within the
  last five years. (For a list of equivalents,
  please contact a counselor.)
• Two semesters in high school, or one
  semester in college of the following:
  Algebra, Biology, Chemistry (with a lab
  component), and Advanced Math (or
  Physics). All required course grades must
  be completed with a "C" or better.

Requirements for Program Entry

• As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer or
  ACT) with appropriate benchmark scores
  is necessary. Accuplacer benchmarks are
  Arithmetic, 90; Reading Comprehension,
  90; Sentence Skills, 95; Algebra, 65.
  ACT benchmarks are Math, 18; Reading,
  21; English, 21. Applicants not meeting
  these benchmarks or the equivalent will
  be required to establish an individualized
  academic plan. Upon completion of the
  plan, full program or waitlist status will
  be granted. To learn more about these
  assessments and program benchmark
  scores, please contact an advisor at
  (920) 498-5444 or (888) 385-6982.
• Attend mandatory spring
  program orientation.
• Complete an American Heart Association
  Health Care Provider CPR course.

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable
in any of the courses marked with an asterisk. A
student who withdraws or receives a grade lower
than a "C" in a program course may apply for
re-entry into the program. Consideration for re-
entry will be at the discretion of the re-entry team
and will be dependent on clinical availability.

++ No final grade lower than a "B" is acceptable in
General Anatomy & Physiology and Microbiology.
A student who withdraws or receives a grade
lower than a "B" in these courses may apply for
re-entry into the program. Consideration for re-
entry will be at the discretion of the re-entry team
and will be dependent on clinical availability.

**The credit for 10-890-101, College 101,
is an institutional requirement for
graduation. Consequently, it is not part
of the program credit requirements.

Students are required to maintain a
current CPR card to comply with
affiliating agency requirements.

• Complete caregiver background
  check. A fee is charged for this service.
  Additional information will be provided
  upon acceptance into the program.
• A four hour job shadow is
  strongly encouraged.
• Complete a Functional Abilities Inventory.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-501-101 MEDICAL TERMINOLOGY
...focuses on the component parts of
medical terms: prefixes, suffixes, and
root words. Students practice formation,
analysis and reconstruction of terms.
Emphasis on spelling, definition and
pronunciation. Introduction to operative,
diagnostic, therapeutic and symptomatic
terminology of all body systems, as well
as systemic and surgical terminology.

10-515-111 RESPIRATORY SURVEY
...examines the role of the respiratory
therapist within the healthcare community.
Reviews the ethical, legal, and regulatory
principles that guide practice across
diverse populations. Introductory patient
assessment and critical thinking processes
used in the development of respiratory care
plans are explored. (Prerequisite: Accepted
into Respiratory Therapy program)

**10-515-112 RESPIRATORY AIRWAY
MANAGEMENT** ...provides a comprehensive
exploration of airway management concepts
and skills. (Prerequisites: 10-515-172,
Respiratory Therapeutics 2; 10-515-
174, Respiratory/Cardiac Physiology;
10-515-175, Respiratory Clinical 1)

**10-515-113 RESPIRATORY LIFE
SUPPORT** ...focuses on management of
adult ventilatory support. (Prerequisites:
10-515-172, Respiratory Therapeutics 2;
10-515-174, Respiratory/Cardiac Physiology;
10-515-175, Respiratory Clinical 1)

**10-515-164 CLINICAL SIMULATION
REVIEW** ...diagnosis, management, and
treatment received by cardiopulmonary
patients. This course prepares students
for the testing processes utilized by the
National Board for Respiratory Care; all
testing processes will be reviewed utilizing
appropriate content. (Prerequisite: 47-
531-462, ACLS Provider; Corequisites:
10-515-182, Respiratory Clinical 4;
10-515-183, Respiratory Clinical 5)

**10-515-171 RESPIRATORY
THERAPEUTICS 1** ...introduces the
topics of medical gas administration and
humidity and aerosol therapy. The learner
will apply physics, math and patient
assessment concepts to oxygen, aerosol
and humidity. (Prerequisites: 10-515-111,
Respiratory Therapy Survey; 10-806-
177, General Anatomy & Physiology)

**10-515-172 RESPIRATORY
THERAPEUTICS 2**...introduces therapeutic
procedures including arterial puncture,
bronchial hygiene, lung expansion therapy
and pulmonary rehabilitation. (Prerequisite:
10-515-171, Respiratory Therapeutics 1)

**10-515-173 RESPIRATORY
PHARMACOLOGY**...examines basic
pharmacology principles, drug dosage, and
calculations. Medications for inhalation
including mucolytivs, bronchodilators, anti-
inflammatories. Also includes cardiac drugs,
anesthetic drugs, neuromuscular blockers
and antimicrobials. (Prerequisite: 10-806-
177, General Anatomy & Physiology)

**10-515-174 RESPIRATORY/CARDIAC
PHYSIOLOGY**...provides the student with
an in-depth knowledge of the structure and
function of the respiratory and circulatory
systems necessary to function as a competent
Respiratory Therapist. (Prerequisite: 10-
806-177, General Anatomy & Physiology)

10-515-175 RESPIRATORY CLINICAL 1...
introduces respiratory therapy practice in the
hospital setting. Includes the development
of skills such as basic therapeutics, patient
assessment, medical record review,
safety practices, patient interaction and
communication. This course includes the
complete program competency list. At the
completion of this clinical learners must
demonstrate competence in a minimum
of five (required and/or simulated)
competencies. The instructor may identify
specific competencies to be addressed during
this or any clinical. (Prerequisites: 10-515-
170, Respiratory Therapy Survey; 10-515-
171, Respiratory Therapeutics 1; Corequisites:
10-501-101, Medical Terminology; 10-
515-172 Respiratory Therapeutics 2)

10-515-176 RESPIRATORY DISEASE
...exploration of signs, symptoms, causes,
progression and treatment of obstructive,
restrictive and infectious diseases or disorder
of the body that affect the respiratory
system. (Prerequisites: 10-515-111,
Respiratory Therapy Survey; 10-806-
177, General Anatomy & Physiology)

**10-515-178 RESPIRATORY CLINICAL
2**...continued development of Respiratory
Therapy clinical skills including respiratory
therapeutics. Focuses on monitoring,
analyzing and interpreting data to make
appropriate modifications in patient care.
This course includes the complete program
competency list. At the completion of
this clinical learners must demonstrate
competence in a minimum of 12 (required
and/or simulated) competencies. (Prerequisite:
10-515-175, Respiratory Clinical 1)

**10-515-179 RESPIRATORY CLINICAL
3**...continued development of Respiratory
Therapy clinical skills including
respiratory therapeutics. Focuses on
monitoring, analyzing and interpreting
data to make appropriate modifications
in patient care. This course includes
the complete program competency
list. At the completion of this clinical
learners must demonstrate competence
in a minimum of 19 (required and/or
simulated) competencies. (Corequisite:
10-515-178, Respiratory Clinical 2)

**10-515-180 RESPIRATORY NEO/PEDS
CARE**...provides a comprehensive orientation
to the field of neonatal and pediatric
respiratory care to include fetal development,
birth, neonatal physiology, pulmonary
dynamics, abnormal cardiopulmonary
conditions, diseases, noninvasive and invasive
therapeutic interventions. (Prerequisite:
10-515-113, Respiratory Life Support)

**10-515-181 RESPIRATORY/
CARDIO DIAGNOSTICS** ...advanced
invasive and noninvasive diagnostic
cardiopulmonary procedures including
pulmonary function, hemodynamics
and rescue medicine. (Prerequisites: 10-
515-173, Respiratory Pharmacology;
10-515-176, Respiratory Disease; 10-
515-113, Respiratory Life Support)

**10-515-182 RESPIRATORY CLINICAL
4** ...continued development of Respiratory
Therapy clinical skills including
respiratory therapeutics. Focuses on
monitoring, analyzing and interpreting
data to make appropriate modifications
in patient care. This course includes
the complete program competency
list. At the completion of this clinical
learners must demonstrate competence
in a minimum of 26 (required and/or
simulated) competencies. (Prerequisite:
10-515-179, Respiratory Clinical 3)

10-515-183 RESPIRATORY CLINICAL 5
...focuses on the completion of respiratory
therapy competencies and transition
to employment. This course includes
the complete program competency
list. At the completion of this clinical
learners must demonstrate competence
in all of the (required and required/
simulated) competencies. (Corequisite:
10-515-182, Respiratory Clinical 4)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

This two-year program prepares
its learners to design, develop and
test business application software
using various leading programming
languages. Graduates will be proficient
in HTML, CSS, C#, Java, ASP.NET,
and SQL along with various supporting
technologies in Agile development,
database and web development,
mobile applications, documentation
and system analysis and design.

Graduates will be prepared to support the
software development needs of businesses
in a wide variety of industries. Training
blends general education development with
required IT technical skills. All courses are
offered in an in-person format and some are
also offered online for additional flexibility.

Program Outcomes

- Develop logical problem solving skills
  that incorporate critical thinking,
  technical manuals, web resources,
  and programming utilities.
- Develop software applications that
  employ object-oriented principles
  and techniques using the C# and
  Java programming languages
- Develop, build, and configure
  dynamic and interactive Web pages
  using HTML, CSS, JavaScript,
  and ASP coding techniques.
- Develop and deploy user-
  friendly mobile applications.
- Design a normalized database and
  develop entity relationships.
- Develop relational database applications
  using database management software
  to code SQL statements and queries.
- Develop technical documentation to
  support the use of software applications.
- Plan and conduct computer
  training sessions using appropriate
  training materials, assessment tools,
  technologies, and delivery methods.
- Communicate effectively and
  work collaboratively within a
  software development team.
- Incorporate best practices of the Agile
  software development methodology.
- Perform entry-level systems analysis and
  design work to solve business problems.

- Participate in the System Development
  Life Cycle tasks of an information
  system from an initial request through
  implementation using both traditional
  and object-oriented methodologies.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent.
  For a list of equivalents, go to
  www.nwtc.edu/gettingstarted.
- One year of high school
  algebra completed.
- Ability to use computer
  keyboard and mouse.
- As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program benchmarks are
  Reading Comprehension: 55; Sentence
  Skills: 75; Arithmetic: 65. Students
  not meeting these benchmarks or the
  equivalent will be required to establish
  an individualized academic plan.
  Students may have the opportunity to
  enroll in selected program core courses
  while completing their individualized
  plan. Upon completion of the plan,
  students will be eligible for all program
  courses. However, higher test scores will
  lead to greater success in core program
  courses. To learn more about these
  assessments and program benchmark
  scores, please contact a counselor at
  (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will
have the potential for employment
in the following areas:

Programmer: Create, modify, and test
the code, forms, and script that allow
computer applications to run. Work
from specifications drawn up by software
developers or other individuals. May assist
software developers by analyzing user needs
and designing software solutions. May
develop and write computer programs
to store, locate, and retrieve specific
documents, data, and information.

Software Developer: Develop, create, and
modify general computer applications
software or specialized utility programs.
Analyze user needs and develop software
solutions. Design software or customize
software for client use with the aim
of optimizing operational efficiency.
May analyze and design databases
within an application area, working

individually or coordinating database
development as part of a team. May
supervise computer programmers.

With additional education and/or work
experience, graduates may find other
opportunities for employment.

- Systems Analyst
- Database Administrator
- Software Architect
- Software Consultant/Trainer

Curriculum

Students following the study plan
below will complete the Software
Developer associate degree in the
number of semesters shown.

FIRST SEMESTER		CREDITS
10-105-102	Career Planning	2
10-152-140	IT:Program:Logic-Intro	1
10-152-173	IT:Program:Part 1 (C#)	3
10-152-185	Website Coding	3
10-154-125	IT:Web:Database Development	3
*10-801-136	English Composition 1	3
10-804-133	Math & Logic	3
**10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-152-174	IT:Program:Part 2 (C#)	3
10-152-180	IT:Web:Scripting-JavaScript	3
10-152-184	IT:Web:Programming-SQL	3
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-105-103	Career Preparation	1
10-152-141	IT:Program:Part 3 (Java)	3
10-152-150	IT:Program:Systems Analy/Des	3
10-152-151	IT:Program:SQL-Advanced	3
10-152-153	IT:Program:Team Software Dev	3
10-809-166	Intro to Ethics: Theory & App	3
OR		
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-107-195	IT:Training	2
10-152-142	IT:Program:Part 4 (Java)	3
10-152-154	IT:Program:Mobile Apps Dev	3
10-152-183	IT:Web:Scripting-ASP.Net	3
10-152-199	IT:Program:Career Experience	2
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		16
TOTAL CREDITS		69

CURRICULUM NOTE

*Students must earn a grade of "C" or better
in 10-801-136, English Composition 1 to
enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-105-102 CAREER PLANNING
...experiential learning introduction.
Learn how personal branding allows
candidates to differentiate themselves
from the competition through
appearance, personality, and marketing
competency. Career portfolio introduced.
(Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION
...create professional resume and cover
letter, prepare for interviews, understand
interviewing techniques, participate in a
mock interview. Submission of experiential
learning proposal. (Prerequisites: 10-
105-102, Career Planning; 10-801-
136, English Composition 1)

10-107-195 IT:TRAINING ...effective
presentation skills, plan training content and
delivery methods, write lesson plans, provide
training materials, conduct training sessions,
and assess learners' grasp of stated objectives.

10-152-140 IT:PROGRAM:LOGIC-
INTRO ...techniques for developing
computer programs to solve business
problems; includes logic, structure,
flowcharting, comparing, looping,
variables, arrays, file processing,
objects, methods, properties, events,
data validation, testing procedures.

10-152-141 IT:PROGRAM:PART 3 (JAVA)
...apply programming and object-oriented
design concepts using the Java language.
Design concepts and programming tools
will be integrated with an emphasis on
practical business solutions. (Prerequisite:
10-152-173, IT:Program:Part 1 (C#))

10-152-142 IT:PROGRAM:PART 4
(JAVA) ...focuses on the server side of
application programming for the Web. Topics
include: inheritance, exception handling,
advanced GUI applications, applets and
array lists. (Prerequisites: 10-152-180,
IT:Web:Scripting-Javascript;10-152-141,
IT:Program:Part 3 (Java))

10-152-150 IT:PROGRAM:SYSTEMS
ANALYSIS AND DESIGN ...apply
the steps of systems analysis and design
including preliminary investigations, setting
objectives, establishing costs/benefits, and
collecting data. Develop specifications
for outputs, inputs, files, procedures, and
controls of business systems. (Prerequisites:
10-152-184, Web:Programming-SQL;
10-152-174, IT:Program:Part 2 (C#))

10-152-151 IT:PROGRAM:SQL-
ADVANCED ...write advanced SQL
statements, design robust databases and
write Extract, Transfer, Load (ETL)
processes. Additional topics include
database transformations, alternate database
technologies, emerging database trends and
database administration/security. (Prerequisite:
10-152-184, IT:Web:Programming-SQL)

10-152-153 IT:PROGRAM:SOFTWARE
DEVELOPMENT ...introduces Agile
software development methodology
using small teams to take an application
through its entire life cycle including
project management, requirements
gathering, analysis, design, development,
unit/regression testing, deployment and
maintenance. (Prerequisites: 10-152-184,
IT:Web:Programming-SQL;10-152-174,
IT:Program: Part 2 (C#))

10-152-154 IT:PROGRAM:MOBILE
APPLICATION DEVELOPMENT ...design
and construct programs/applications for
mobile devices such as the iPhone, Droid,
and/or others. Hands-on activities using an
SDK (software development kit), along with
instructions and guidelines for application
deployment. (Prerequisites: 10-152-180
IT:Web:Scripting-Javascript;10-152-141,
IT:Program: Part 3 (Java))

10-152-173 IT:PROGRAM:PART 1 (C#)
...provides a foundation of syntax/semantics of
C# .NET programming language to develop
Windows-based/ Web-based applications.
Covers the architecture of Microsoft's .NET
platform where C# is the native language.

10-152-174 IT:PROGRAM:PART 2
(C#) ...object-oriented concepts and C#
.NET syntax, focus on file/data access and
Windows Presentation Foundation (WPF)
applications which incorporate n-tier
design principles, patterns, collections,
initializers, XML, streams, serialization,
encryption and LINQ. (Prerequisites: 10-
154-125, IT:Web:Database Development;
10-152-173, IT:Program:Part 1 (C#))

10-152-180 IT:WEB:SCRIPTING-
JAVASCRIPT ...integrate JavaScript into
interactive HTML5 pages, create user-defined
functions, complete form validation, use
objects within the Document Object Model,
debug code, and test browser compatibility.
(Prerequisite: 10-152-185, Website Coding)

10-152-183 IT:WEB:SCRIPTING-ASP.
NET ...build interactive, database-driven
websites with ASP.NET and C# with
Visual Studio, handling web form events,
using ASP.NET controls, designing master
pages, managing state, and interacting
with databases with ASP.NET data-bound
controls. (Prerequisites: 10-154-125,
IT:Web:Database Development; 10-152-
180, IT:Web:Client Script-Javascript)

10-152-184 IT:WEB:PROGRAMMING-
SQL ...write queries in a relational database:
creating tables, setting primary/foreign
keys, populating tables, manipulating
data and reporting. Explore join types,
stored procedures, functions, and database
administration SQL statements. (Prerequisite:
10-154-125, IT:Web:Database Development)

10-152-185 WEBSITE CODING ...create
code for generating the structure, function,
and design of static websites using standards-
based HTML5 and CSS3; validate code; test
multi-browser and multi-device functionality.

10-152-199 IT:PROGRAM:CAREER
EXPERIENCE ...practical hands-on
experience applying skills developed in
the program at an approved site with
supervision by an employer and the
instructor with related projects and
discussion. (Prerequisites: 10-801-136,
English Composition I; 10-804-133, Math
& Logic; 10-105-103, Career Preparation)

10-154-125 IT:WEB:DATABASE
DEVELOPMENT ...database uses,
database terminology, analyzing information
requirements, data models, database
design phases, entity relationships,
normalization processes, database
management systems, database objects,
development environments, creating tables,
writing queries using SQL, testing.

Solar Energy Technology
Program Code 104824 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description
Solar Energy Technology prepares students with a combination of electro-mechanical principles and knowledge of solar energy technologies to meet the needs of the emerging green energy workforce. The program will provide a skilled workforce of technicians who are able to design, install, operate and maintain solar electric and solar thermal systems for both residential and light commercial applications.

Program Outcomes
- Evaluate the energy use of commercial and residential buildings and perform site assessments for solar electric and solar thermal systems.
- Generate technical project proposals and estimates for solar electric and solar thermal systems.
- Read and comprehend mechanical blueprints.
- Upload and download information from remote and local networks to aid in the operation and maintenance of systems.
- Facilitate distributed generation agreements and connection to local utilities.
- Obtain zoning regulations and building permits.
- Design, install and maintain solar electric systems.
- Design, install and maintain solar thermal systems.
- Ensure compliance with the national electrical code.
- Provide training to user upon project completion.
- Install, troubleshoot, repair and modify mechanical and electrical systems including programmable controllers.

Requirements for Program Entry
- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses required for mastery of algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems and measurements).
- The student will either provide proof of having completed course work in Windows, Word and Excel or pass a proficiency test.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are College Math: 63; Reading Comprehension: 80; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential
A graduate of the program will have the potential for employment for diverse employers, such as renewable energy businesses, energy companies, equipment supply companies, oil and gas field service companies and utilities in the following areas:

- Solar Electric Energy Technician: designs, estimates, installs, troubleshoots, repairs and modifies residential and/or commercial solar electric systems.

- Solar Site Assessor: conducts facility energy audit/assessments; is responsible for making recommendations regarding solar energy systems. Prepares cost estimates, energy analysis; is accountable for building long-term customer relationships.

- Solar Sales Representative: provides consultations and assessments to potential customers. Manages the pipeline of contacts and opportunities within an assigned territory and deliver compelling presentations. Acts as the project manager for installation of systems and coordination of closeout.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Energy Analyst
- Journeyperson: Plumber, Electrician
- Project Manager
- Energy Engineer

- Environmental Consultant

The following certificates/technical diplomas may be applied toward this program:
- 904821, Renewable Energy-Solar Electric Certificate
- 904822, Renewable Energy-Solar Thermal Certificate

COURSE DESCRIPTIONS
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-403-100 BLUEPRINT READING INTRO ...develop the knowledge skills process and understanding of site plans, footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, lighting, ventilating, and air conditioning.

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-480-101 ENERGY-INTRO RENEW & SUSTAIN ...an overview of various renewable energy technologies and sustainable design practices and their current applications. Emphasis will be placed on policies, renewable energy production, green products and jobs.

10-481-114 INTRO TO ENERGY MANAGEMENT ...introduces the basic concepts of energy, utility systems and utility rate structures; defines the need for energy management as an integral part of society at all levels. The course will present the various opportunities available to energy management students.

10-482-126 INTRODUCTION TO SOLAR ...an overview of the use of sunlight to produce heat and electricity and the practical and economical use of solar power and solar thermal systems. Learn the importance of energy efficiency and the economics of solar hybrid designs.

10-482-132 PHOTOVOLTAICS-DESIGN & SITE ...learn steps to performing a site audit prior to installation of a PV system. Focus on defining the solar window, system site placement, system sizing and design, load analysis and energy efficiency concepts. (Corequisite: 10-482-126, Intro to Solar)

10-482-133 PHOTOVOLTAICS-ADVANCED ...topics include batteries, wiring configurations, system diagramming, National Electrical code, component selection, wiring, safety and system maintenance. (Prerequisites: 10-482-126 Intro to Solar; 10-660-104, DC 1: Intro; 10-660-105, DC 2: Circuits; 10-620-107, AC 1: Properties)

10-483-106 SOLAR ADVANCED SYSTEM DESIGN ... troubleshooting and repairing renewable thermal and electric equipment; diagnosing faulty equipment; selecting replacement parts; preparing a detailed work order. (Prerequisites: 10-483-107, Solar Thermal Design & Site; 10-482-132, Photovoltaics-Design & Site; 10-482-133, Photovoltaics-Adv; Corequisite: 10-483-108, Solar Thermal Advanced)

10-483-107 SOLAR THERMAL DESIGN & SITE ...learn steps to performing a site audit prior to installation of a solar thermal system. Focus on defining the solar window, system site placement and sizing, lead analysis and energy efficiency. (Prerequisite: 10-482-126, Intro to Solar)

10-483-108 SOLAR THERMAL-ADVANCED ...topics include safety, system design and layout, component selection, mounting collectors, plumbing and insulation copper pipe, storage tank installation, heat exchanger and circulation pump. (Prerequisite: 10-482-126, Intro to Solar)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC 1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also studied. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The graduates of Structural Systems will be the people that build the body of the building. They will be the carpenters, masons and concrete workers. These students will have entry level skills pertaining to the structural elements within the construction field. Credits from this program will transfer to the Construction Technology associate degree.

Program Outcomes

- Produce structural drawings and details for residential and commercial buildings.
- Explain the design and construction process.
- Display a positive attitude towards the profession.
- Choose appropriate materials for use in building construction.
- Estimate materials required for construction.
- Interpret structural layouts.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 34; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Carpenter Helper: will assist Carpenters in all areas of building construction; installs interior and exterior finish surface materials, interior floor and ceiling specialties, rough framing, building layout, stair construction, and interior trim.

Mason Helper: will assist Mason with brick and/or other types of masonry to construct foundations, walls, fireplaces, smokestacks, arches and similar structures.

Concrete Finisher Helper: assists Concrete Finisher with placing, finishing, protecting and repairing concrete in engineering and construction projects.

General Laborer: performs basic yet important physical work tasks at building construction sites.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Carpenter
- Mason
- Concrete Finisher

Completers will be able to apply credits toward the following programs:

- 10-475-2, Construction Technology associate degree

Curriculum

Students following the study plan below will complete the Structural Systems technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-403-101	Blueprint Reading 1	2
10-410-101	Site Development	2
10-410-102	Footing Systems	2
10-410-103	Foundation Systems	2
10-410-104	Floor Framing Systems	3
10-449-112	OSHA 30	1
10-804-101	Math 1-Trades	2
*10-890-101	College 101	1
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		17

SECOND SEMESTER		
10-403-102	Blueprint Reading 2	2
10-408-100	Masonry	2
10-410-105	Wall Framing Systems	3
10-410-106	Roof & Ceiling Framing Systems	3
10-410-107	Stair Systems	3
10-410-108	Uniform Building Code	1
10-410-109	Material Estimating	2
SEMESTER TOTAL		16
TOTAL CREDITS		33

CURRICULUM NOTE

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

Note

- A ìCî or better in BOTH 31-801-385, Communicating-Writing and 31-801-386, Communicating Effectively will satisfy the Construction Technology Associate Degree requirement for 10-801-196, Oral/Interpersonal Communication.
- A ìCî or better in 10-804-101, Math 1-Trades will satisfy the prerequisite to enroll in the Construction Technology Associate Degree course 10-804-107, College Mathematics.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-403-101 BLUEPRINT READING 1 ...drawing development/equipment, blueprints, plot and building layout, scaling and dimensioning practices, symbols, specs, codes, materials and uses.

10-403-102 BLUEPRINT READING 2 ...blueprints as they relate to the mechanical trades and applied specifications and codes to blueprints; emphasis on residential and commercial. (Prerequisite: 10-403-101 Blueprint Reading 1)

10-408-100 MASONRY ...this course will give students basic understanding of mason trades with emphasis on brick, cement and safety for the trade. Careers in masonry will also be discussed.

10-410-101 SITE DEVELOPMENT ...students will understand the basics of building layout including heights and surveying and what the start-up phase in construction entails.

10-410-102 FOOTING SYSTEMS ...footings with an emphasis on construction and different types of footings; layout and format are also included. (Corequisite: 10-410-101, Site Development)

10-410-103 FOUNDATION SYSTEMS ...foundation walls with an emphasis on the construction of foundation walls, different types of foundations (block, concrete, wood), insulation and water proofing of foundation walls. ICF will also be covered. (Corequisites: 10-410-101, Site Development; 10410102, Footing Systems)

10-410-104 FLOOR FRAMING SYSTEMS ...this course teaches all aspects of floor construction and flooring system construction. (Corequisites: 10-410-101 Site Development; 10-410-102 Footing Systems; 10410103, Foundation Systems)

10-410-105 WALL FRAMING SYSTEMS ...this course will cover wall building and wall systems from standard wood or metal framing to tip-up pre-cast panels. (Prerequisite: 10-410-104, Floor Framing Systems)

10-410-106 ROOF & CEILING FRAMING SYSTEMS ...course will encompass all roof and ceiling systems from trusses to steel to pre-cast concrete. (Corequisite: 10-410-105, Wall Systems)

10-410-107 STAIR SYSTEMS ...the stair framing course will encompass all aspects of stair construction. (Corequisites: 10-410-105, Wall Systems; 10-410-106, Roof & Ceiling Framing Systems)

10-410-108 UNIFORM BUILDING CODE ...this course will teach the basic requirements for the erection of buildings inhabited by the public for living, work and pleasure.

10-410-109 MATERIAL ESTIMATING ...perform material and labor cost estimates of building foundations, floor systems, superstructures, and exterior and interior finish systems.

10-449-112 OSHA 30 ...addresses OSHA 29CFR1926 rules and is approved by OSHA for construction workers, foremen, job supervisors, and anyone involved in construction trades. Successful participants receive 30-hour card from OSHA.

Offered at the Green Bay campus and most first year program courses available at Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Supply Chain Management prepares students in all activities involved in the flow of goods from the point of origin to the point of consumption. Specific areas include transportation, inventory control, materials management, operations management, purchasing, international trade, customer service, and logistics management.

Program Outcomes

- Compare transportation modes and make decisions that will reflect savings for a company on fuel and oil price changes.
- Plan a product using enterprise resource planning (ERP) implementation best practices.
- Provide cost-effective requests for transportation services.
- Develop a global supply chain management perspective.
- Apply legal and ethical standards.
- Monitor customer service, quality, and cost performance.
- Demonstrate knowledge of the application of supply chain management concepts.
- Review and interpret importing and exporting documents and commercial transportation documents for a global supply chain shipment.
- Provide environment sustainability analysis within a supply chain.
- Incorporate marketing and financial instruments to describe payment terms with global financial transactions.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test

scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Buyer/Planner: coordinates activities between purchasing and manufacturing scheduling.

Claims Analyst: performs duties in the risk management process including over, short, and damage incidents and claims.

Customer Service Representative: communicates with customers in order to match customer needs with vehicle and driver availability, deals with customer inquiries, expedites freight, and tracks orders.

Dispatcher: assigns freight to routes, assigns vehicles and routes to drivers, and handles exceptions.

Inventory Analyst: compiles and manages information of amount, kind, and value of merchandise, material, or stock on hand to obtain optimum inventory balance, price, and costs.

Inventory Control Specialist: coordinates inventory issues with purchasing, production, and marketing; tracks current and forecasted levels of inbound and finished goods inventory.

Logistics Technician: communicates effectively with carriers and customers in 3PL environment, manages trailer needs, provides carrier assignments, monitors and traces customer shipments, and participates in carrier evaluation process.

Materials Planner: coordinates and expedites flow of manufacturing materials, parts, and assemblies with or between departments or plants in accordance with production and shipping schedules.

Master Production Scheduler: creates master production schedule and work orders; establishes priorities for current and forecasted customer demand; establishes availability or capacity of workers, parts, machinery, and equipment.

Purchasing Assistant: performs basic activities related to supplier evaluation and selection, product specifications, order quantities, and delivery requirements.

Shipping and Receiving Specialist: coordinates the flow of raw materials and finished goods to meet production and customer requirements and works with transportation carriers to assure timely and accurate pickup and delivery.

Transportation Planner/Coordinator: interfaces with customers and carriers in resolving pricing and delivery issues in 3PL environment, optimizes order consolidation and carrier selection considering cost, lead time, carrier capacity, and warehouse space constraints.

Warehouse Specialist: manages the flow of inventory into and out of a storage facility or distribution center, and works with owners of the inventory to meet inventory level and customer service needs.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Account Manager
- Logistics Manager
- Materials Manager
- Production and Inventory Control Manager
- Purchasing Manager
- Traffic Manager

The following certificates/technical diplomas may be applied toward this program:

- 901825, Supply Chain Management
- 908094, Leadership in Human Relations
- 901821, Global Business

Curriculum

Students following the study plan below will complete the Supply Chain Management associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-103-121	Micro: Word-Intro	1
10-103-131	Micro: Excel-Intro	1
10-103-141	Micro: Access-Intro	1
10-103-151	Micro: PowerPoint-Intro	1
10-104-148	Global Marketing	3
10-104-191	Customer Service	3
10-105-102	Career Planning	2
10-182-157	Logistics/Supply Chain Mgmt	3
10-801-136	English Composition 1	3
*10-890-101	College 101	1
SEMESTER TOTAL		19

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-160	Global Business Mgmt	3
10-182-110	Lean Operations Mgmt	3
10-182-127	Purchasing	3
10-182-160	Global Supply Chain Mgmt	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-105-103	Career Preparation	1
10-182-120	Enterprise Resource Plan/Cont	3
10-182-162	Import/Export Compliance	3
10-801-196	Oral/Interpersonal Comm	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-102-104	International Business Prac	3
10-104-125	Event Marketing	3
10-182-131	Negotiations	3
10-182-199	Supply Chain Career Experience	2
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		17
TOTAL CREDITS		70

CURRICULUM NOTE

*The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirement.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-101-106 ACCOUNTING-FOR NON-ACCOUNTANTS ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class de-emphasizes the use of debits, credits, journal entries and other accounting procedures.

10-102-104 INTERNATIONAL BUSINESS PRACTICE FIRM ...(IBPF) students will start up their own business and sell and buy products in a virtual classroom environment. Each student will play the role of a manager. (Prerequisite: 10-801-136, English Composition 1)

10-102-160 GLOBAL BUSINESS MANAGEMENT ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global human resource management, corporate social responsibility. (Prerequisite: 10-801-136, English Composition 1)

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating/formatting tables, graphics; and merging documents. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating/modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form/report wizards. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...presentation skills using: graphics, diagrams, design themes, sounds, animations, slide transitions, and integration with other software. Windows experience improves success; consider 10-103-111, Windows/Computer Basics. (Corequisite: 10-103-121, Micro: Word-Intro)

10-104-125 EVENT MARKETING... planning, promotion execution, and evaluation of special events (entertainment, industry, meeting/convention). Students will work toward the actual staging of an event (will require time outside of the classroom setting).

10-104-148 GLOBAL MARKETING ...tools necessary for the student to understand the risks, rewards, and the technical aspects of doing business in a global environment.

10-104-191 CUSTOMER SERVICE ...develop professional telephone etiquette, explore customer service work environments, identify and analyze customer service failures, resolve problems cost effectively, set complaint policies, and develop communication techniques to handle complaining customers.

10-105-102 CAREER PLANNING ...experiential learning introduction. Learn how personal branding allows candidates to differentiate themselves from the competition through appearance, personality, and marketing competency. Career portfolio introduced. (Corequisite: 10-890-101, College 101)

10-105-103 CAREER PREPARATION ...create professional resume and cover letter, prepare for interviews, understand interviewing techniques, participate in a mock interview. Submission of experiential learning proposal. (Prerequisite: 10-105-102, Career Planning; 10-801-136, English Composition 1)

10-182-110 LEAN OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, Six Sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-182-120 ENTERPRISE RESOURCE PLAN/CONTROL ...enterprise resource planning (ERP), benefits of ERP implementation in an organization, business process alignment, value chain process, technology and international considerations, successful change management, and ERP project management. (Prerequisite: 10-801-136, English Composition 1)

10-182-127 PURCHASING ...role of purchasing in business, industry, and the community; legal and ethical aspects of purchasing including systems, staffing, price/cost analysis, contract administration, and dealing with vendors.

10-182-131 NEGOTIATIONS ...techniques and skills used in bargaining to maximize a company's profits and competitiveness. Appropriate for learners in any Business and Information Technology program as well as for non-program students. (Prerequisite: 10-801-136, English Composition 1)

10-182-157 LOGISTICS/SUPPLY CHAIN MANAGEMENT ...integrated logistics supply chain, dimensions of logistics and supply chain management, demand management and customer service, procurement and supply management, global logistics, inventory management, warehousing, transportation and third-party logistics.

10-182-160 GLOBAL SUPPLY CHAIN MANAGEMENT ...methods of foreign market entry, international contracts, INCOTERMS 2000, terms of payment, international commercial documents, international insurance, export packaging, customs clearance, and global supply chain logistics infrastructure.

10-182-162 IMPORT/EXPORT COMPLIANCE ...develop import/export-related documentation, examine import/export controls and licenses, and explore import/export related security. Examine compliance requirements related to importing/exporting goods in support of global operations and in response to case studies. (Prerequisite: 10-182-160, Global Supply Chain Management)

10-182-199 SUPPLY CHAIN CAREER EXPERIENCE ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition 1; 10-804-123, Math w Business Apps; 10-105-103, Career Preparation)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Surgical Technologist prepares and maintains a sterile field before and during surgery, passes instruments and supplies to the surgeon, provides safe patient care, and prepares instruments for operative procedures.

The goal of this program is to provide students with the opportunity to develop the skills and knowledge necessary to gain employment as surgical technologists and become contributing members of the health care team. This will be accomplished by (1) preparing competent graduates in the cognitive, psychomotor, and affective learning domains, and (2) meeting or exceeding the criteria set forth in the current CAAHEP Standards and Guidelines for the Accreditation of Educational Programs in Surgical Technology.

Program Outcomes

• Apply health science, biomedical, and technological principles to the peri-operative environment
• Apply principles of disinfection and sterilization to the surgical environment, equipment, and instrumentation
• Maintain principles of sterile technique in the surgical environment
• Prepare the operating room by gathering equipment and supplies
• Pass instruments, equipment, and supplies in a safe and efficient manner
• Provide a safe, efficient, and supportive environment for the peri-operative patient
• Anticipate the sequence of events during surgical procedures
• Demonstrate safe practice with medications and solutions
• Function as an ethical, legal, and professional member of the healthcare team within the surgical technologist's scope of practice
• Demonstrate proficiency on the comprehensive surgical technologist exam as specified by the NBSTSA

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should

a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in a hospital, out patient surgery, private practice, or clinical setting as a:

• Surgical Technologist
• Central Supply Technician
• Claims Approver
• Private Scrub Technologist

Clinical Experience

• Students will be required to purchase scrub suits, pay for liability insurance for each course, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances and participate in early morning clinicals. Students must be able to reach, bend, and stand for long periods of time (2 to 4 hours), as well as lift, push, and pull (50 pounds).
• Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
• Students will be required to show proof of an annual flu vaccine.

Accreditation

The Surgical Technologist Program is accredited by Commission on Accreditation of Allied Health Education Programs in collaboration with the Accreditation Review Committee on Education in Surgical Technology
6-W. Dry Creek Circle, Suite #110
Littletown, CO 80120
(303) 694-9262
FAX (303) 741-3655

Board/Certification Examinations

Graduates of the Surgical Technologist program are required to take the Surgical Technology National Certification Exam.

Requirements for Program Application

• Completed application.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• Admissions Assessment or equivalent or ACT assessment taken within the last five years. (For a list of equivalents, please contact a Counselor.)

Requirements for Program Entry

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer or

Curriculum

Students following the study plan below will complete the Surgical Technologist technical diploma in the number of semesters shown.

First semester courses can be taken prior to being admitted into the Surgical Technologist program.

FIRST SEMESTER		CREDITS
*10-501-101	Medical Terminology	3
10-801-196	Oral/Interpersonal Comm	3
**10-890-101	College 101	1
*31-509-302	Human Body in Health & Disease	3
*31-512-326	ST: Infection Control	2
SEMESTER TOTAL		12

SECOND SEMESTER		
*31-512-327	ST: Introduction	4
*31-512-328	ST: Fundamentals 1	4
*31-512-329	ST: Fundamentals 2	2
*31-512-330	ST: Clinical 1	3
SEMESTER TOTAL		13

THIRD SEMESTER		
*31-512-331	ST: Surgical Procedures	4
*31-512-332	ST: Clinical 2	4
*31-512-334	ST: Clinical 3	4
*31-512-340	ST: Bridge to Clinical 2	1
SEMESTER TOTAL		13
TOTAL CREDITS		38

CURRICULUM NOTE
*No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Prior to second semester coursework, students must complete 10-501-101, Medical Terminology; 31-509-302, Human Body in Health & Disease; and 31-512-326, ST: Infection Control.

Prior to third semester coursework, students must complete 10-801-196, Oral/Interpersonal Communication.

ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 34; Reading Comprehension, 55; Sentence Skills, 75. ACT benchmarks are Math, 13; Reading, 15; English, 16. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.

• Attend mandatory program orientation.
• Complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
• Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
• Complete a Functional Abilities Inventory.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

31-512-327 ST: INTRODUCTION ...provides the foundational knowledge of disinfection, sterilization, infection control, and asepsis. Legal and ethical issues encountered in the healthcare environment are explored. Simulated laboratory practice enables the learner to develop beginning technical skills. (Prerequisites: 31-509-302, Human Body in Health & Disease; 10-501-101, Medical Terminology; Accepted into the Surgical Technologist Program; Corequisite: 31-512-326, ST: Infection Control)

31-512-328 ST: FUNDAMENTALS 1 ...includes the basic clinical skills needed by the Surgical Technologist in the scrub role. Learners develop skills in identifying basic instrumentation, supplies, drains, catheters, dressings and sponges. Includes practice experience in creating a sterile field, draping, passing instruments and supplies, performing counts and preparing supplies. (Prerequisites: 31-509-302, Human Body in Health & Disease; 10-501-101, Medical Terminology; 31-512-326, ST: Infection Control)

31-512-329 ST: FUNDAMENTALS 2 ...builds upon and reinforces the role of the Surgical Technologist as a member of the operating room team. Discusses care of the patient before, during and after surgery with emphasis on surgical wounds, wound closure material, and vital signs. Includes lecture and lab experiences. (Corequisites: 31-512-327, ST: Introduction; 31-512-328, ST: Fundamentals 1)

31-512-330 ST: CLINICAL 1 ...apply basic surgical theories, principles, and procedural techniques in the operating room. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel. (Corequisites: 31-512-327, ST: Intro to Surg Tech; 31-512-328, ST: Fundamentals 1)

31-512-331 ST: SURGICAL PROCEDURES ...provides the foundational knowledge of surgical core and specialty procedures. Examines pathophysiology, diagnostic interventions, and surgical interventions for a variety of surgical procedures. Incorporates integration of basic health sciences and technical knowledge to complete a plan of action for a surgical procedure. (Prerequisites: 31-512-329, ST: Fundamentals 2; 31-512-330, ST: Clinical 1)

31-512-332 ST: CLINICAL 2 ...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures. (Prerequisites: 31-512-329, ST: Fundamentals 2; 31-512-330, ST: Clinical 1; Corequisites: 31-512-331, ST: Surgical Procedures; 31-512-340, ST: Bridge to Clinical 2)

31-512-334 ST: CLINICAL 3 ...enhances the student's technical experience and employee skills. Serves as a transition between student and employee. Application of advanced skills for the entry-level surgical technologist in the clinical setting. (Corequisites: 31-512-332, ST: Clinical 2; 31-512-331, ST: Surgical Procedures)

31-512-340 ST: BRIDGE TO CLINICAL 2 ...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during surgical procedures. (Prerequisite: 31-512-330, ST: Clinical 1)

Sustainable Food & Agricultural Systems

Program Code 100903 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Sustainable Food & Agriculture Systems program prepares learners with the entrepreneurial and technical skills necessary to manage a profitable, environmentally sound agricultural business. Students will learn the fundamentals of sustainable agriculture focusing on crop production, animal management and farm business. Emphasis is placed on practical entrepreneurial and field training experiences. Graduates are qualified for employment in a variety of positions associated with sustainable agriculture, including commercial gardens and livestock operations, wholesale and retail management as well as food distribution and logistics.

Program Outcomes

- Evaluate sustainable food system and farm.
- Balance soil health.
- Make business and financial decisions.
- Maintain farm records.
- Market sustainable crops.
- Grow sustainable crops.
- Practice animal husbandry.
- Manage farm operations.
- Innovate in value-added food and logistics.
- Fill out organic certification paperwork and comply with standards.
- Use effective oral and written communication skills.
- Utilize problem solving skills.
- Perform safe work practices.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment in the following areas:

- Farmer
- Gardener
- Crop production specialist
- Farm-to-school program leader
- Livestock operations manager
- Sustainable Agriculture wholesale and retail management
- Feed/Animal Health Sales/Consulting
- Certifying agency inspector

The following certificates/technical diplomas may be applied toward this program:

- 900901, Organic Agriculture Practices Certificate

Curriculum

Students following the study plan below will complete the Sustainable Food & Agricultral Systems associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-090-111	Sustainable Ag: Issues & Pract	2
10-090-116	Org Soils, Nutrients, Compost	3
10-090-117	World Food & Agriculture	2
10-090-118	Beekeeping & Pollinators	1
10-090-119	Cheese Making & Fermentation	1
10-606-112	Computer Apps for Technicians	1
*10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
**10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		CREDITS
10-090-120	Organic Livestock Practices	2
10-090-121	Organic Gardening	2
10-090-122	Fruits, Nuts, Berries	1
OR		
10-090-123	Organic Poultry Management	1
10-090-124	Aquaponics	1
OR		
10-090-125	Aquaculture	1
10-090-138	Spring Garden Mgmt	1
10-806-112	Principles of Sustainability	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		13

SUMMER SEMESTER		CREDITS
10-090-127	Summer Ag Internship	2
SEMESTER TOTAL		2

THIRD SEMESTER		CREDITS
10-090-103	Organic Field Crops	1
OR		
10-090-106	Org Specialty Animals	1
10-090-128	Managed Grazing	2
10-090-129	Food: Quality/Nutrition/Health	2
10-090-130	Herbs & Health	2
OR		
10-090-133	Artisan Meats: Humane Harvest	2
10-090-137	Fall Garden Management	2
10-101-190	Accounting-QuickBooks	1
10-104-101	Selling Principles	3
10-801-197	Technical Reporting	3
SEMESTER TOTAL		16

FOURTH SEMESTER		CREDITS
10-090-134	Sustainable Ag & Food Business	3
10-090-135	Edible Landscape, Permaculture	2
10-090-136	Small Farm Machinery & Equip	2
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
	Elective	3
SEMESTER TOTAL		16
TOTAL CREDITS		64

CURRICULUM NOTE
*Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

**The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-090-103 ORGANIC FIELD CROPS ... Evaluate organic practices for fertilizing, planting, weed and pest control in corn, soybeans and small grains. Create an organic transition plan, qualify for certification. Evaluate yields, markets, rotations, and cover crops.

10-090-106 ORGANIC SPECIALTY ANIMALS... Compare sustainable agricultural production methods for sheep, goats, hogs, and horses. Do individual research and evaluate production practices and ideas. Create a budget; determine if an enterprise is feasible.

10-090-111 SUSTAINABLE AG: ISSUES & PRACTICES ...use critical thinking skills to compare organic & sustainable agricultural practices with industrial agriculture. Explore food production issues including antibiotics, herbicides, hormones, GMOs, animal welfare, crop yields, nutrients, and pollution.

10-090-116 ORGANIC SOILS, NUTRIENTS, COMPOSTING... Healthy soil is the foundation of sustainable farming and gardening. Build robust soil through organic matter, cultivating beneficial microorganisms, and nutrient cycling. Explore composting techniques and organic fertilizer sources.

10-090-117 WORLD FOOD & AGRICULTURE ...explore the climate, soils, and food of other ecosystems and cultures around the world. Examine the relationships between people and the diversity of their land, food, animals and local traditions.

10-090-118 BEEKEEPING & POLLINATORS ...bees pollinate our crops and orchards; they are an environmental quality indicator species and they provide honey. Explore beekeeping using onsite hives; explore pollinators and habitats, and network with local beekeepers.

10-090-119 CHEESE MAKING & FERMENTATION ...practice the basics of cheese making and fermentation of beverages & food in this hands-on course. Eat what you make. Value the taste, nutrition, and quality of hand-crafted foods.

10-090-120 ORGANIC LIVESTOCK PRACTICES ...students learn how organic farmers manage livestock successfully. Principles covered include organic health care, strategies for reproduction, feeding, housing, and young stock. Review rules and organic certification standards.

10-090-121 ORGANIC GARDENING ...whether gardening on a small scale or using commercial greenhouses and fields, plan seedings, control pests, diseases, and weeds, all using best organic practices. Review rules and organic certification standards.

10-090-122 FRUITS, NUTS, BERRIES ...explore practices used by sustainable, organic and conventional farmers of these crops. Discussion of what works, costs, and how one can grow a saleable product and run a viable enterprise.

10-090-123 ORGANIC POULTRY MANAGEMENT...explore a variety of poultry for backyards or commercial enterprises. Topics include biology, health, feeding, eggs, housing options, processing plans and budgets. Compare organic and conventional management and business opportunities.

10-090-124 AQUAPONICS ...investigate hydroponic plant growing operations; designs, suitable plant species, maintenance, costs, efficiencies and yields. Evaluate potential programs in a sustainable context. Plan a system that fits your budget and goals.

10-090-125 AQUACULTURE ...fish farming, the most suitable species, different system setups and best practices. Develop a budget, explore markets and trends, analyze benefits and obstacles in this business.

10-090-127 SUMMER AG INTERNSHIP... Gain hands-on skills and experience with a mentor farmer or gardener by working at their site or in the NWTC garden. Set goals and report to an NWTC instructor. (Prerequisites: 10-090-111, Sustainable Ag: Issues and Practices; 10-090-116, Organic Soils, Nutrients, Composting; 10-090-120, Organic Livestock Practices; and 10-090-121, Organic Vegetable Production)

10-090-128 MANAGED GRAZING ... examine pasture plants and livestock in a rotational grazing system. Build a fence. Evaluate watering systems, fertilizers, yields and environmental impacts. Meet experienced graziers. Create a grazing plan and budget.

10-090-129 FOOD: QUALITY/NUTRITION/HEALTH... Compare traditional food systems (heirloom breeds, grass-fed beef) with modern production, processing, additives, packaging, transportation, marketing, price, distribution and fast food. Evaluate how these factors influence individual and societal health.

10-090-130 HERBS & HEALTH... Explore various herbs; their unique properties, role in history, medicine, food and other traditional uses. Examine growing practices, harvest, and preservation. Make organic preparations; i.e., tea, infusions, tinctures, and salves.

10-090-133 ARTISAN MEATS: HUMANE HARVEST... Topics include humane butchering, carcass yields, sausage-making, smoking and packaging. Compare professional techniques to home-based skills. Review rules, regulations and sanitary practices. Determine product mix, costs and income potential.

10-090-134 SUSTAINABLE AG & FOOD BUSINESS ...define your goals. Research expenses and potential income for a small food-related enterprise. Outline a budget. Compare markets. Develop a brand identity. Review financial terminology. Draft a business plan.

10-090-135 EDIBLE LANDSCAPE, PERMACULTURE ...design an edible landscape for your homestead, no matter its size or location. Use permaculture concepts of zones, layers, energy flow, water features, perennial plants, beauty, recycling, compost, and self-sufficiency.

10-090-136 SMALL FARM MACHINERY & EQUIPMENT... Evaluate equipment, machinery & tractors needed for a small farm. Troubleshoot small engines; hook up PTOs, hydraulics, plows. Calibrate seeders and fertilizer spreaders, drive a skid steer, try welding.

10-090-137 FALL GARDEN MANAGEMENT...use GAP (Good Agricultural Practices) to harvest, clean and bring produce to markets. Use season-extending hoop house, compost vegetative residue, sow cover crops, and prepare the garden for next year.

10-090-138 SPRING GARDEN MANAGEMENT...work in the greenhouse and high tunnel to seed and grow transplants. Prepare the garden soil, build fertility, sow seed, transplant, and cultivate. Use organic practices, gain hands-on skills.

10-101-190 ACCOUNTING-QUICKBOOKS ...an introductory course in using QuickBooks to create vendor/employee accounts, invoices, budgets, profit/loss statements, balance sheets, A/R, A/P, journals, graphs.

10-104-101 SELLING PRINCIPLES ...selling as a career; success factors in selling; personality development; product knowledge; and the sales process involving preparation, approach, presentation-demonstration, handling objections, and closing the sale successfully.

10-606-112 COMPUTER APPLICATIONS FOR TECHNICIANS...basics of a computer system, computer terminology, the Microsoft Windows environment, file management, Microsoft Word and Microsoft Excel.

Therapeutic Massage *(Pending State Approval)*
Program Code 315371 | 1 Year Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Therapeutic Massage technical dilpoma offers an entry-level training program for individuals interested in becoming a licensed massage therapist, or for existing health care professionals looking to enhance their range of clinical skills and knowledge. During their training, students will gain a comprehensive understanding of the human body and a high degree of professional technical skill with an emphasis on personal and professional development, increased self-awareness and sensitivity. Career opportunities for licensed massage therapists exist in sports clinics, salons, spas, wellness or other health care centers, or as an entrepreneur.

Program Outcomes

- Use effective and professional communication skills.
- Apply universal safety and sanitation techniques related to a massage facility
- Apply assessment criteria of diverse clients in order to adapt massage to specialized populations.
- Apply appropriate therapeutic massage techniques according to a clientís demonstrated needs.
- Demonstrate the knowledge of human anatomy, pathology, and kinesiology in massage practice.
- Educate clients on post-massage care.
- Practice personal wellness techniques in order to maintain a healthy lifestyle.
- Develop and manage a business plan in order to generate professional income.
- Demonstrate the ability to work ethically with others in a diverse population.

- Demonstrate knowledge of Wisconsin state laws and administrative rules governing massage therapy and bodywork therapy.
- Practice within the scope of a licensed massage therapist within the State of Wisconsin.

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 65; Reading Comprehension, 80; Sentence Skills, 60

Wisconsin Caregiver Law

NWTC is required to comply with the Wisconsin Caregiver Law (1997 WISCONSIN ACT 27). The completion of a caregiver background check includes the review of criminal records for convictions of serious crimes or a history of improper behavior. Students accepted into this program must complete a background check through www.CertifiedBackground.com. Information regarding this process is provided to students immediately upon acceptance into the program. Students with a criminal history may be denied access to placement at the discretion of the clinical or practicum site. Consequently, should a student have a history of convictions of serious crimes or a history of improper behaviors, NWTC cannot guarantee clinical/practicum placement or guarantee graduation within typical program timing.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Licensed Massage Therapist: Career opportunities for licensed massage therapists exist in sports clinics, salons,

Curriculum
Students following the study plan below will complete the Therapeutic Massage technical diploma in the number of semesters shown.

SUMMER SEMESTER		CREDITS
10-806-177	Gen Anatomy & Physiology	4
*10-890-101	College 101	1
SEMESTER TOTAL		**5**

FIRST SEMESTER		CREDITS
*10-546-105	Wellness Kinesiology	4
*30-537-101	Therapeutic Massage 1	3
*30-537-102	Therapeutic Massage 2	3
SEMESTER TOTAL		**10**

SECOND SEMESTER		
	*Elective	3
*30-537-111	Specialized Therapeutic Massage	3
SEMESTER TOTAL		**9**

THIRD SEMESTER		
*30-537-112	Massage Clinic & Business Prac	3
SEMESTER TOTAL		**3**
TOTAL CREDITS		**27**

SUGGESTED ELECTIVES
**10-101-106	Accounting for Non-accountants
**10-801-196	Oral/Interpersonal Communication
**10-145-185	Organizing Your Small Business
**10-104-110	Marketing Principles
**10-145-187	Marketing Your Small Business
**10-145-189	Writing a Business Plan-Small Business
**10- 501-101	Medical Terminology
Or Any Allied Health Courses	

spas, wellness or other health care centers, or as an entrepreneur.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Two semesters High School, or one semester of College Chemistry (with a lab component) completed with a grade of ìCî or better.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-546-105 WELLNESS KINESIOLOGY & PATHOLOGY ...this course studies the musculoskeletal system and major muscle groups and their response to movement and exercise. Also introduces disorders that can occur in major body systems with their signs, symptoms and associated pharmacology. (Prerequisite: 10-806-177, General Anatomy & Physiology with a "B" or better)

10-806-177 GENERAL ANATOMY & PHYSIOLOGY ...overview of the human anatomy/physiology using a body-systems approach, emphasizing the interrelationships between form/function at the gross and microscopic levels. (Prerequisite: Accuplacer-Reading = 80 OR ACT-Reading = 17 OR 10-838-105, Intro to Reading and Study Skills AND 10-806-134, Gen Chem or other lab-based chemistry w ìCî or better. Health Sciences programs may require a higher grade; refer to your plan for details.)

30-537-101 THERAPEUTIC MASSAGE 1 ...students will learn the history of massage, the environmental considerations and equipment necessary to provide treatment, hygiene and safety, and legal requirements of therapeutic massage. Students will begin hands on training by mastering foundational skills such as draping and positioning, self-care and body mechanics, and basic massage techniques. (Corequisite: 10-546-105, Wellness Kinesiology & Pathology)

30-537-102 THERPEUTIC MASSAGE 2 ...Students will develop skills in assessment, medical terminology, record keeping and documentation necessary to provide therapeutic massage. Students will expand their knowledge of massage techniques to include myofascial and deep tissue. Students will begin their clinical experience on assigned dates. Students must hold a current American Heart Association Health Care Provider CPR card.(Corequisite: 10-546-105, Wellness Kinesiology & Pathology)

30-537-111 SPECIALIZED THERAPEUTIC MASSAGE ...students will develop techniques, including neuromuscular and proprioceptive, for treatment of special populations such as athletes, mother and infant, elderly, end-of-life, and chronic pain. Students will have exposure to modalities and spa therapies, eastern and energetic approaches. (Prerequisite: 30-537-102, Therapeutic Massage 2)

30-537-112 MASSAGE CLINIC AND BUSINESS PRACTICE ...provides students the opportunity to be involved in all aspects of running a massage clinic. In the business section, topics covered include: ethics and legal requirements, national and state certification and licensing requirements; business startup and management; marketing and financial management. (Prerequisite: 30-537-102, Therapeutic Massage 2)

Utilities Engineering Technology   Program Code 104681 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Utilities Engineering Technology prepares students for employment as utility system engineering technicians, designers, coordinators, planners, construction supervisors, project managers, estimators and equipment maintenance technicians, substation test (relay) technicians, in the utility industry from power generation through transmission and distribution.

Program Outcomes

- Identify and apply the necessary safety procedures required to work safely in the electrical and gas utility industry.
- Acquire an understanding of the utility industry from generation through distribution.
- Perform standard testing of electrical distribution equipment.
- Plan, manage and implement utility projects.
- Explore the overall operation and control of utility generation and distribution equipment.
- Conduct nondestructive and predictive testing of electrical distribution equipment.
- Examine and apply knowledge of gas, electricity, electronics, hydraulics, electric motors and mechanical systems.
- Draw and read electrical schematics and diagrams.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Construct ladder diagrams, flow charts, timing diagrams and basic computer control algorithms for machine control.
- Perform electrical/mechanical assembly/disassembly, repair, and calibrate components by selecting tools and equipment and following procedures.
- Implement the basic fastening skills related to machine fabrication and assembly requirements.
- Apply electrical skills to troubleshoot control and operator panels.
- Apply gas diagnostic tools to troubleshoot and resolve system problems.
- Apply programming languages to the control of single programmable controllers and industrial networks.
- Apply computer hardware/software applications to utility systems for design and coordination.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.

Requirements for Program Entry

- Completed application.

- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Courses require mastery of algebra skills (real numbers, algebraic expressions, equations and inequalities, word problems and measurements).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Elementary Algebra: 61; Reading Comprehension: 80; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the potential for employment in the following areas:

Systems Control & Relay Technician: installs, tests, adjusts, calibrates, repairs, and troubleshoots electrical power systems, protective relays, controls, alarms, metering, remote controls and telemetering equipment. Coordinates the installation and modification of protective relays with engineers.

Substation Technician: installs, tests, adjusts and repairs power transformers, loads tap changers, potential transformers, current transformers, high voltage switchgears, battery and charger systems and control equipment used in substations. Evaluates transformer oil analysis and conducts high-potential tests, Doble tests, primary injections, breaker trip tests, contact resistances tests, etc.

Distribution Systems Designer: designs systems for construction and maintenance of natural gas and electric systems. Develops construction plans, prepares cost estimates, creates material requirements, processes work requests and prepares documents.

Power Plant Instrument Technician: analyzes and repairs electrical and instrumentation/controls hardware and software in a power generation plant. Troubleshoots, maintains, and repairs generator excitation systems, synchronization systems, and voltage regulators.

Relay Technologist: ensures safe and effective operation of transmissions, distribution and generation facilities by calibrating, testing, maintaining and repairing protective and auxiliary relays, relay systems and associated communication equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Utilities Construction Project Manager
- Power Plant Maintenance Supervisor

FIRST SEMESTER	CREDITS
10-614-113 2D Essentials	2
10-620-100 Fluids 1: Basic Pneumatics	1
10-620-101 Fluids 2: Basic Hydraulics	1
10-660-101 Digital 1: Logic	1
10-660-102 Digital 2: Sequential	1
10-660-104 DC 1: Introduction	1
10-660-105 DC 2: Circuits	1
10-660-106 DC 3: Circuit Theorems	1
10-664-100 Automation 1: Control Logic	1
10-664-101 Automation 2: Motor Control	1
10-804-118 Interm Algebra w Apps	4
10-809-198 Intro to Psychology	3
*10-890-101 College 101	1
SEMESTER TOTAL	**19**

SECOND SEMESTER	
10-442-100 Metal Fabrication 1	2
10-468-100 Utility Safety	2
10-660-107 AC 1: Properties	1
10-660-108 AC 2: Reactance	1
10-660-109 AC 3: RLC Circuits	1
10-660-110 Electronics 1: Diodes-Basic	1
10-664-102 Automation 3: PLC	1
10-664-103 Automation 4: PLC	1
10-664-104 Automation 5: PLC	1
10-804-196 Trigonometry w Apps	3
10-806-143 College Physics 1	3
SEMESTER TOTAL	**17**

THIRD SEMESTER	
10-468-101 Utility Power Systems Coor	3
10-468-105 Utility Generation Systems	2
10-605-157 Power Electronics 1: Devices	1
10-605-158 Power Electronics 2: Drives	1
10-620-159 Power Electronics 3: Drives	1
10-620-161 Power Electricity 1: Motors	1
10-620-162 Power Electricity 2: Motors	1
10-664-160 Control 1: Discrete Systems	1
10-664-161 Control 2: Process Systems	1
10-664-162 Control 3: Motion Systems	1
**10-801-136 English Composition 1	3
SEMESTER TOTAL	**16**

FOURTH SEMESTER	
10-468-102 Utility Project Execution	3
10-468-103 Utility Systems Maintenance	3
10-468-104 Utility Systems-Natural Gas	3
10-606-113 CAD	2
10-801-197 Technical Reporting	3
10-809-172 Intro to Diversity Studies	3
SEMESTER TOTAL	**17**
TOTAL CREDITS	**69**

CURRICULUM NOTE
*The credit for 10-890-101, College 101 is an institutional requirement for graduation. Consequently, it is not part of the program credit requirements.

**Students must earn a grade of "C" or better in 10-801-136, English Composition to enroll in 10-801-197, Technical Reporting.

- Substation Design Supervisor
- Substation Preventive Maintenance Supervisor
- Electro-Mechanical Technician
- Electronics Technician
- Field Service Technician

The following certificates/technical diplomas may be applied toward this program:
- 904561, Industrial Maintenance

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-442-100 METAL FABRICATION 1 ...safety and introduction to basic metal fabrication tools and equipment utilizing precision measuring tools, geometric nomenclature, basic layout and assembly skills along with polygon construction, and triangulation from scale drawings. (Prerequisite: 10-614-113, 2D Essentials)

10-468-100 UTILITY SAFETY ...learn utility system safety terminology, definitions and practices. Define safety responsibility, vehicle laws, rules and regulations. Identify substation components; demonstrate safe work procedures on a simulated energized system using testing tools. (Prerequisite: 10-660-106, DC 3: Circuit Theorems; Corequisites: 10-660-107, AC 1: Properties; 10-660-108, AC 2: Reactance; 10-660-109 AC 3: RLC Circuits)

10-468-101 UTILITY POWER SYSTEMS COORDINATION ...learn utility systems interconnection from generation through distribution. Includes: powerhouse, hydroelectric, wind, solar and nuclear, EHV and HV transmission, the utility grid, device coordination, metering, protective relays, fuses, breakers, and fault current interrupting. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-605-157, Power Electronics 1: Devices; 10-605-158, Power Electronics 2: Drives; 10-605-159, Power Electronics 3: Drives)

10-468-102 UTILITY PROJECT EXECUTION ...develop the utility project management skills necessary to manage and execute a construction project from concept through commissioning. Learn project utility planning, design and execution skills with hands-on methods and real world applications. (Prerequisite: 10-468-101, Utility Power Systems Coordination)

10-468-103 UTILITY SYSTEMS MAINTENANCE ...learn utility systems testing methods and hands-on experience with the tools necessary to provide preventive and predictive maintenance services for electrical distribution equipment. Utilize standard utility testing tools, non-destructive testing tools and predictive failure analysis methods. (Prerequisite: 10-468-101, Utility Power Systems Coordination)

10-468-104 UTILITY SYSTEMS-NATURAL GAS ...learn natural gas utility systems configuration from supply sources to local distribution and customer loads. Train on basic gas utility field installation and service practices. (Prerequisites: 10-468-101, Utility Power Systems Coordination; 10-442-100, Metal Fabrication 1)

10-468-105 UTILITY GENERATION SYSTEMS ...learn utility generation systems types, configuration and basic operation and maintenance of generation systems. Includes: powerhouse, gas turbine, hydroelectric, wind, solar and nuclear. Emphasis of coal fired & gas generation systems (Prerequisite: Completion of second semester coursework; Corequisites: 10-605-157, Power Electronics 1: Devices; 10-605-158, Power Electronics 2: Drives; 10-605-159, Power Electronics 3: Drives)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-107, AC1: Properties)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-606-113 CAD (COMPUTER AIDED DRAFTING) ...computer aided drafting using AutoCAD software focusing on template settings; creating and manipulating layers; basic drawing, editing, and inquiry commands; blocks and attributes; and plotting. (Corequisites: 10-607-119, Intro to Civil Engineering Technology OR 10-606-119, Technical Sketching OR 10-614-113, 2D Essentials)

10-614-113 2D ESSENTIALS ... an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of industrial AC drives to AC motors. (Corequisite: 10-605-158, Power Electronics 2: Drives)

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-162 POWER ELECTRICITY 2: MOTORS ...single and 3-phase AC Induction motors, specialty motor performance and three-phase power systems.. (Corequisite: 10-620-161, Power Electricity 1: Motors)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Corequisites: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Corequisite: 10-660-105, DC 2: Circuits)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Corequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC system, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisite:10-664-102, Automation 3: PLC OR 10-664-104, Automation 5: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

Vineyard Management (Viticulture)
Program Code 103201 | Associate Degree

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

The Vineyard Management (Viticulture) Associate Degree will train both current and future employees of vineyards in the grape growing industry. Students will gain viticulture skills such as planting, pruning, training, harvesting, gathering, sustainability, integrated pest management (IPM), and storing of grapes or other fruits that will be turned into wine using the fermentation process. NWTC will partner its resources with the Viticulture and Enology Science and Technology Alliance (VESTA). The viticulture technical courses will be taught in conjunction with VESTA through a combination of online learning and field experiences. The Vineyard Management (Viticulture) Program will provide students with hands-on field experiences at local vineyards that focus on the principles and best practices of maintaining a vineyard through seasonal changes.

Program Outcomes

- Manage all part-time and seasonal vineyard workers.
- Maintain records of all vineyard operation activities.
- Assist wine maker in crop load management, harvest coordination and execution.
- Monitor the vineyard regarding nutrient status, grape diseases, insect, fungus, weeds, and other pests.
- Maintain records of all viticultural monitoring activities.
- Practice IPM (Integrated Pest Management).
- Recommend and plan any large scale changes in vineyard plantings, specifically cultivars and selection of the site.
- Plan and assist in irrigation scheduling and operation.
- Plan and assist in general property maintenance.
- Operate vineyard machinery safely.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent.

(For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills (whole numbers, fractions, decimals, percents and measurements).
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 65; Reading Comprehension: 55; Sentence Skills: 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the basic skills necessary to own and operate or be employed at a vineyard as a:
- Vineyard Manager
- Vineyard Worker

With additional education and/or work experience, graduates may find other opportunities for employment.
- Pest Management Industry - Crop Scout
- Green Industry - Greenhouse, Propagation
- Chemical/Pesticide Industry

Note
- NWTC is a member of VESTA, a partnership of colleges nationwide that together deliver online Enology (winemaking) and Viticulture (grape growing) education. VESTA is formally referred to as the Viticulture and Enology Science and Technology Alliance. More information is on the VESTA website www.vesta-usa.org.
- Students desiring to earn an Associate Degree in Vineyard Management (Viticulture) must apply for admission to NWTC and must take a minimum of 25% of technical core courses at NWTC.
- The VESTA online courses, identifiable by "VIN" in front of the course code have a separate

admission and registration process.
- Practicum sites throughout the state are listed on the VESTA website. New ones can be added if the student finds a willing and eligible vineyard.
- Some courses have a minimum age requirement.
- Further information on VESTA can be found on the website www.vesta-usa.org.

Curriculum

Students following the study plan below will complete the Vineyard Management (Viticulture) associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-090-111	Sustainable Ag: Issues & Pract	2
10-145-185	Organizing Your Small Business	3
VIN111	Intro to Viticulture	3
VIN112	Botanical Viticulture	4
10-801-136	English Composition 1	3
SEMESTER TOTAL		15

SECOND SEMESTER		
*10-090-116	Org Soils, Nutrients, Compost	3
10-145-189	Writing a Business Plan-Sm Bus	3
VIN113	Winter Viticulture Tech	2
VIN114	Spring Viticulture Tech	2
10-804-107	College Mathematics	3
10-806-112	Principles of Sustainability	3
SEMESTER TOTAL		16

THIRD SEMESTER		
VIN115	Sum/Fall Vit Tech	2
VIN211	Integrated Pest Mgmt	2
VIN213	Regional Vineyard Mgmt	2
VIN105	Molec Prin Grape/Wine	4
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
*10-090-121	Organic Gardening	2
*10-090-134	Sustainable Ag & Food Business	3
VIN293	Soils for Viticulture	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	Elective	2
SEMESTER TOTAL		16
TOTAL CREDITS		63

CURRICULUM NOTE
*These courses must be taken at NWTC to receive an Associate Degree.
- Organic Soils, Nutrients, Composting, 10-090-116
- Organic Gardening, 10-090-121
- Sustainable Ag & Food Business, 10-090-134

SUGGESTED ELECTIVES
- Intro to Enology, VIN146
- Sensory Evaluation, VIN266

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-090-111 SUSTAINABLE AG: ISSUES & PRACTICES ...use critical thinking skills to compare organic & sustainable agricultural practices with industrial agriculture. Explore food production issues including antibiotics, herbicides, hormones, GMOs, animal welfare, crop yields, nutrients, and pollution.

10-090-116 ORGANIC SOILS, NUTRIENTS, COMPOSTING...
Healthy soil is the foundation of sustainable farming and gardening. Build robust soil through organic matter, cultivating beneficial microorganisms, and nutrient cycling. Explore composting techniques and organic fertilizer sources.

10-090-121 ORGANIC GARDENING ...whether gardening on a small scale or using commercial greenhouses and fields, plan seedings, control pests, diseases, and weeds, all using best organic practices. Review rules and organic certification standards.

10-090-134 SUSTAINABLE AG & FOOD BUSINESS ...define your goals. Research expenses and potential income for a small food-related enterprise. Outline a budget. Compare markets. Develop a brand identity. Review financial terminology. Draft a business plan.

10-145-185 ORGANIZING YOUR SMALL BUSINESS ...the components of small business ownership; examining a variety of small business startup and operation scenarios. Assesses your own readiness to begin the entrepreneurial adventure.

10-145-189 WRITING A BUSINESS PLAN-SMALL BUSINESS ...as a necessary component to beginning a small business, from addressing facets of the business plan, observing various types of plans, to realizing readiness to begin. Plan preparation/presentation are required.

VIN 111 INTRO TO VITICULTURE AND VINEYARD ESTABLISHMENT ...learn about viticulture and vineyard establishment. Topics include: cultivar selection, site preparation, equipment, site selection, first season establishment, vine development and training, trellis systems, weed control, vine disease control, and pruning. Students partner with approved vineyards for field experience.

VIN113 WINTER VITICULTURE TECHNOLOGY ...practical experience in winter vineyard operations. Students partner with approved vineyards for required field experience which will serve as work experience for those seeking employment in commercial viticulture. (Prerequisite: VIN 111, Introduction to Viticulture and Vineyard Establishment or permission)

VIN 114 SPRING VITICULTURE TECHNOLOGY ...practical experience in spring vineyard operations. Students are required to partner with approved vineyards for field experience which will serve as work experience for those seeking employment in commercial viticulture. (Prerequisite: VIN 111, Introduction to Viticulture and Vineyard Establishment or permission.)

VIN 115 SUMMER/FALL VITICULTURE TECHNOLOGY ...practical experience in summer/fall vineyard operations. Students are required to partner with approved vineyards for field experience which will serve as work experience for those seeking employment in commercial viticulture. (Recommendation: VIN 111, Introduction to Viticulture and Vineyard Establishment or consent of the instructor or VIN 113, Winter/Spring Viticulture Technology)

VIN 211 INTEGRATED PEST MANAGEMENT ...learn how to manage normal cultural practices such as planting, fertility, harvesting, and pruning as well as managing the insect, disease, and weed programs that occur either regularly or sporadically.

VIN 213 REGIONAL VINEYARD MANAGEMENT ...study commercial grape growing throughout the United States. Learn about viticultural methods practiced, challenges faced, and how those challenges are addressed in different grape growing regions throughout the continental United States. (Prerequisites: VIN 111, Vineyard Establishment and Maintenance; VIN 113, Winter/Spring Viticulture Technology, or permission).

VIN 293 SOILS FOR VITICULTURE ...explore soil properties and behavior, and their influence on wines. This course focuses not only on growth and production, but on the long-term effect of viticulture on soil quality and the wider environment.

VIN 105 MOLECULAR PRINCIPLES IN GRAPE & WINE ...emphasis on chemical fundamentals of winemaking. This course includes organic, biochemistry, and applications with a focus on the grape and wine industry.

VIN 112 BOTANICAL VITICULTURE ...This course is a survey of the plant kingdom, including plant cells and tissues, the ecology, morphology, physiology and life cycles of representative plants of each division. It will also focus communication on grapevine biology, vine structures and their functions.

Web Application Programming Technician
Program Code 311523 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Web Application Programming
technical diploma provides learners the
ability to integrate web technologies
to develop database-driven, interactive
and dynamic web sites.

Program Outcomes

- Design, build, or maintain web
  sites using authoring or scripting
  languages, content creation tools,
  management tools and digital media.
- Perform or direct web site updates.
- Backup files from web sites
  to local directories for instant
  recovery in case of problems.
- Identify problems uncovered by
  testing or customer feedback, and
  correct problems or refer problems to
  appropriate personnel for correction.
- Evaluate code to ensure that it is valid,
  is properly structured, meets industry
  standards and is compatible with
  browsers, devices, or operating systems.
- Maintain understanding of current
  web technologies or programming
  practices through continuing education,
  reading, or participation in professional
  conferences, workshops, or groups.
- Analyze user needs to determine
  technical requirements.
- Develop or validate test routines and
  schedules to ensure that test cases
  mimic external interfaces and address
  all browser and device types.

Requirements for Program Entry

- Completed application.
- High School transcript or equivalent. (For
  a list of equivalents, go to www.nwtc.edu.)
- Completed one year of high
  school algebra or equivalency.
- Computer familiarity and ability
  to use a keyboard and mouse.
- A minimum keyboarding
  skill of 30 WPM.
- As a requirement for program entry, an
  Academic Skills Assessment (Accuplacer)
  with appropriate benchmark scores is
  necessary. Program Benchmarks are
  Reading Comprehension: 55; Sentence
  Skills: 75; Algebra: 61. Students not
  meeting these benchmarks or the
  equivalent will be required to establish
  an individualized academic plan.
  Students may have the opportunity to
  enroll in selected program core courses
  while completing their individualized
  plan. Upon completion of the plan,
  students will be eligible for all program
  courses. However, higher test scores will
  lead to greater success in core program
  courses. To learn more about these
  assessments and program benchmark
  scores, please contact a counselor at
  (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have
the potential for employment as a:
- Web Developer
- PHP Developer
- Web Applications Developer
- .net Web Developer
- Web Programmer
- Web Architect
- Web Specialist

Some positions may require additional
education and/or work experience.

The following certificates/technical diplomas
may be applied toward this program:
- 901522, Web Application Programming

Curriculum

Students following the study plan below
will complete the Web Application
Programming Technician technical diploma
in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-152-185	Website Coding	3
10-154-125	IT:Web:Database Development	3
*10-890-101	College 101	1
SEMESTER TOTAL		7

SECOND SEMESTER		
10-150-144	IT:Network:Operating Sys Fund	3
10-152-180	IT:Web:Scripting-JavaScript	3
10-152-184	IT:Web:Programming-SQL	3
10-804-133	Math & Logic	3
SEMESTER TOTAL		12

THIRD SEMESTER		
10-152-182	IT:Web:Scripting-PHP	3
10-152-183	IT:Web:Scripting-ASP.Net	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		12
TOTAL CREDITS		31

CURRICULUM NOTE
*The credit for 10-890-101, College 101,
is an Institutional Requirement for
graduation. Consequently, it is not part
of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity
for students to develop the knowledge,
skills, and understanding required
for employment in this field.

10-150-144 IT:NETWORK:OPERATING
SYSTEM FUNDAMENTALS
...installation of Windows client,
Windows Server and Linux Server
operating systems. Basic networking
topologies and protocol fundamentals.
Application installation including Simple
Mail Transport Protocol, File Transfer
Protocol, and Web server technologies.

10-152-180 IT:WEB:SCRIPTING-
JAVASCRIPT ...integrate JavaScript into
interactive HTML5 pages, create user-defined
functions, complete form validation, use
objects within the Document Object Model,
debug code, and test browser compatibility.
(Prerequisite: 10-152-185, Website Coding)

10-152-182 IT:WEB:SCRIPTING-PHP
...use PHP, MySQL, HTML5, CSS3 and
Apache to create standards based websites.
PHP is used to connect to a MySQL database
and retrieve site content. PHP is also used
to organize the HTML5. (Prerequisite: 10-
154-125, IT:Web:Database Development)

10-152-183 IT:WEB:SCRIPTING-ASP.
NET ...build interactive, database-driven
websites with ASP.NET and C# with
Visual Studio, handling web form events,
using ASP.NET controls, designing master
pages, managing state, and interacting
with databases with ASP.NET data-bound
controls. (Prerequisites: 10-154-125,
IT:Web:Database Development; 10-152-
180, IT:Web:Client Script-Javascript)

10-152-184 IT:WEB:PROGRAMMING-
SQL ...write queries in a relational database:
creating tables, setting primary/foreign
keys, populating tables, manipulating
data and reporting. Explore join types,
stored procedures, functions, and database
administration SQL statements. (Prerequisite:
10-154-125, IT:Web:Database Development)

10-152-185 WEBSITE CODING ...create
code for generating the structure, function,
and design of static websites using standards-
based HTML5 and CSS3; validate code; test
multi-browser and multi-device functionality.

10-154-125 IT:WEB:DATABASE
DEVELOPMENT ...database uses,
database terminology, analyzing information
requirements, data models, database
design phases, entity relationships,
normalization processes, database
management systems, database objects,
development environments, creating tables,
writing queries using SQL, testing.

Web Design Technician Program Code 311522 | Technical Diploma

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Web Design technical diploma provides learners the ability to develop web sites by learning how to design and code functional graphics, interfaces, navigation, animations, page formatting and styles.

Program Outcomes

- Perform or direct web site updates.
- Design content, graphics and digital assets for web sites.
- Develop front-end Web user interfaces.
- Implement web site content and graphics to meet user needs.
- Convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content.
- Redesign existing websites with compliant Web techniques.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Completed one year of high school algebra or equivalency.
- Computer familiarity and ability to use a keyboard and mouse.
- Minimum typing speed of 30 wpm.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment as a:

- Web (site) Developer
- Front End Web Developer
- User Experience (ux) Designer
- User Interface (ui) Designer
- Graphic and Interface Designer

Curriculum

Students following the study plan below will complete the Web Design Technician technical diploma in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-152-185	Website Coding	3
10-804-133	Math & Logic	3
*10-890-101	College 101	1
SEMESTER TOTAL		**10**

SECOND SEMESTER		
10-135-115	Online Search Strategies	3
10-135-150	Web Graphic Design	3
10-801-136	English Composition 1	3
SEMESTER TOTAL		**9**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-135-151	Website Design	3
10-135-155	Web Content Management Sys	3
SEMESTER TOTAL		**7**
TOTAL CREDITS		**26**

CURRICULUM NOTE

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

Some positions may require additional education and/or work experience.

The following certificates/technical diplomas may be applied toward this program:
- 901352, Web Design

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self- exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images.

10-135-115 ONLINE SEARCH STRATEGIES ...understanding of how search engines relate to the success of a website or web-based business by investigating the primary search engines and the tactics that can be used to increase visibility within search engines.

10-135-150 WEB GRAPHIC DESIGN ...(Adobe Photoshop) design and prepare graphics for the web including graphics for backgrounds, rollover effects, navigation, and badges. Also includes techniques for optimization and transparency. (Prerequisites: 10-111-101, Macintosh Image Editing; 10-152-185, Website Coding)

10-135-151 WEBSITE DESIGN ...(Adobe Dreamweaver) use standards based HTML5 and CSS3 to design, develop and deploy websites; including: browser compatibility, FTP, forms, multi-media, RSS, and site management. (Prerequisite: 10-135-150, Web Graphic Design; 10-804-133, Math & Logic)

10-135-155 WEB CONTENT MANAGEMENT SYSTEMS ...(WordPress CMS) install, configure and customize using themes and plugins. Analyze security, user management, blog usage and mobile development. Develop using HTML5, CSS3, PHP and MySQL. (Prerequisite: 10-135-150, Web Graphic Design)

10-152-185 WEBSITE CODING ...create code for generating the structure, function, and design of static websites using standards-based HTML5 and CSS3; validate code; test multi-browser and multi-device functionality.

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Web Development program prepares learners to integrate web technologies to support internet-based business systems and websites using concepts in design and programming.

Program Outcomes

- Develop, build, and configure dynamic and interactive websites or applications.
- Produce effective, web-optimized graphics.
- Ensure cross-platform and cross-browser website usability.
- Create functional and efficient website navigation.
- Create a database design and effective interface to support a web application and a variety of web campaigns.
- Understand the infrastructure required to support a robust website or application.
- Understand the importance of and techniques for search engine optimization.
- Install, configure and customize websites in a Content Management System.
- Explore analytical tools available to measure effectiveness of websites and web campaigns.
- Develop an approach to remain current with web development trends.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Completed one year of high school algebra or equivalency.
- Computer familiarity and ability to use a keyboard and mouse.

- Minimum typing speed of 30 wpm.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Arithmetic, 65; Reading Comprehension, 55: Sentence Skills, 75. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment as a:

Web Developer: designs, implements, and maintains internet and internet web applications/sites.

Web Technical Support: develops and maintains internal system support processes and coordinates the integration of the web with other computer systems.

Web Analyst: track and analyze key business metrics related to web activities.

Some positions may require additional education and/or work experience.

The following certificates/technical diplomas may be applied toward this program:
- 901522, Web Application Programming
- 901352, Web Design
- 311523, Web Application Programming Technician
- 311522, Web Design Technician Technical Diploma
- 311523, Web Application Programming Technician Technical Diploma

Curriculum

Students following the study plan below will complete the Web Development associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-150-144	IT:Network:Operating Sys Fund	3
10-152-185	Website Coding	3
10-154-125	IT:Web:Database Development	3
10-804-133	Math & Logic	3
*10-890-101	College 101	1
SEMESTER TOTAL		**16**

SECOND SEMESTER		
10-135-115	Online Search Strategies	3
10-135-150	Web Graphic Design	3
10-152-184	IT:Web:Programming-SQL	3
10-801-136	English Composition 1	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-135-151	Website Design	3
10-135-155	Web Content Management Sys	3
10-152-180	IT:Web:Scripting-JavaScript	3
10-152-182	IT:Web:Scripting-PHP	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		**16**

FOURTH SEMESTER		
10-135-180	Web Campaign Management	3
10-135-185	Web Emerging Technologies	2
10-135-199	Web Dev Internship Practicum	2
OR		
10-135-197	Web Dev Field Research	2
10-152-183	IT:Web:Scripting-ASP.Net	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		**16**
TOTAL CREDITS		**66**

CURRICULUM NOTE

*The credit for 10-890-101, College 101, is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-102-100 BUS AND INFO TECH OCCUP PREP ...career exploration, self- exploration, career planning, career placement, job seeking skills. This course should not be taken before the 3rd semester or completing at least half of the core program courses.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat) scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print. An introduction to manipulating bitmap images.

10-135-115 ONLINE SEARCH STRATEGIES ...understanding of how search engines relate to the success of a website or web-based business by investigating the primary search engines and the tactics that can be used to increase visibility within search engines.

10-135-150 WEB GRAPHIC DESIGN ...(Adobe Photoshop) design and prepare graphics for the web including graphics for backgrounds, rollover effects, navigation, and badges. Also includes techniques for optimization and transparency. (Prerequisites: 10-111-101, Macintosh Image Editing; 10-152-185, Website Coding)

10-135-151 WEBSITE DESIGN ...(Adobe Dreamweaver) use standards based HTML5 and CSS3 to design, develop and deploy websites; including: browser compatibility, FTP, forms, multi-media, RSS, and site management. (Prerequisite: 10-135-150, Web Graphic Design; 10-804-133, Math & Logic)

10-135-155 WEB CONTENT MANAGEMENT SYSTEMS ...(WordPress CMS) install, configure and customize using themes and plugins. Analyze security, user management, blog usage and mobile development. Develop using HTML5, CSS3, PHP and MySQL. (Prerequisite: 10-135-150, Web Graphic Design)

10-135-180 WEB CAMPAIGN MANAGEMENT ...build, execute, analyze and report upon web campaigns with the use of databases. Explore techniques and tools to monitor campaigns. Execute post-campaign measurements and ROI analysis. (Prerequisites: 10-135-151, Website Design; 10-154-125, IT:Web:Database Development; 10-801-136 English Composition 1)

10-135-185 WEB EMERGING TECHNOLOGIES ...review upcoming web technologies. Learn strategies to remain current in web technology trends. Explore a variety of trusted sources for trend information. (Prerequisite: 10-135-151, Website Design; 10-801-136 English Composition 1)

10-135-197 WEB DEVELOPMENT FIELD RESEARCH ...alternative to employment approved by the instructor with related projects and discussion. May include in-depth study of an industry, business, career, or job shadowing. (Prerequisites: 10-801-136, English Composition I; 10-804-133, Math & Logic; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-135-199 WEB DEVELOPMENT INTERNSHIP PRACTICUM ...practical, hands-on experience applying skills developed in the program at an approved site with supervision by an employer and the instructor with related projects and discussion. (Prerequisites: 10-801-136, English Composition I; 10-804-133, Math & Logic; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

10-150-144 IT:NETWORK:OPERATING SYSTEM FUNDAMENTALS ...installation of Windows client, Windows Server and Linux Server operating systems. Basic networking topologies and protocol fundamentals. Application installation including Simple Mail Transport Protocol, File Transfer Protocol, and Web server technologies.

10-152-180 IT:WEB:SCRIPTING-JAVASCRIPT ...integrate JavaScript into interactive HTML5 pages, create user-defined functions, complete form validation, use objects within the Document Object Model, debug code, and test browser compatibility. (Prerequisite: 10-152-185, Website Coding)

10-152-182 IT:WEB:SCRIPTING-PHP ...use PHP, MySQL, HTML5, CSS3 and Apache to create standards based websites. PHP is used to connect to a MySQL database and retrieve site content. PHP is also used to organize the HTML5. (Prerequisite: 10-154-125, IT:Web:Database Development)

10-152-183 IT:WEB:SCRIPTING-ASP. NET ...build interactive, database-driven websites with ASP.NET and C# with Visual Studio, handling web form events, using ASP.NET controls, designing master pages, managing state, and interacting with databases with ASP.NET data-bound controls. (Prerequisites: 10-154-125, IT:Web:Database Development; 10-152-180, IT:Web:Client Script-Javascript; 10-804-133, Math & Logic)

10-152-184 IT:WEB:PROGRAMMING-SQL ...write queries in a relational database: creating tables, setting primary/foreign keys, populating tables, manipulating data and reporting. Explore join types, stored procedures, functions, and database administration SQL statements. (Prerequisite: 10-154-125, IT:Web:Database Development)

10-152-185 WEBSITE CODING ...create code for generating the structure, function, and design of static websites using standards-based HTML5 and CSS3; validate code; test multi-browser and multi-device functionality.

10-154-125 IT:WEB:DATABASE DEVELOPMENT ...database uses, database terminology, analyzing information requirements, data models, database design phases, entity relationships, normalization processes, database management systems, database objects, development environments, creating tables, writing queries using SQL, testing.

Offered at the Green Bay, Marinette and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (888) 385-6982.

This program is fully eligible for financial aid.

Program Description

Welding prepares students to join metal by applying heat and pressure to join metal sections together to form a permanent bond. Welders plan layouts or work from blueprints, drawings, or other specifications.

Program Outcomes

- Be successfully employed in the welding industry.
- Perform procedures using plasma, carbon arc, oxyacetylene processes.
- Perform procedures using the Shielded Metal Arc Welding process (S.M.A.W.).
- Perform procedures using the Gas Metal Arc Welding process (G.M.A.W.).
- Perform procedures using the Gas Tungsten Arc Welding process (G.T.A.W.).
- Perform procedures using the Flux Core Arc Welding process (F.C.A.W.).
- Perform procedures using the Submerged Arc Welding process (S.A.W.).
- Perform welding procedures using the Metal Core process.
- Interpret mechanical drawings.
- Fabricate projects from blueprints and sketches.
- Perform basic mathematical computations.
- Identify various ferrous and non-ferrous materials.
- Communicate with co-workers and supervisors.

Requirements for Program Entry

- Completed application.

- High school transcript or equivalent (such as an HSED or GEDÆ Transcript).
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are: Arithmetic: 34, Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of the program will have the potential for employment as a Maintenance Welder, Qualified Welder, Structural Welder, Welder/Fabricator, and Pipe Welder. In these jobs, the graduate will build and repair metal components using basic knowledge of blueprints, metallurgy, and layout while applying the major welding processes used by industry; and will be trained in code welding according to the AWS (American Welding Society) and ASME (American Society of Mechanical Engineers) with testing provided on campus. Other positions might include Construction Trades Welder, Ironworker Trades Welder, Millwright, Sheetmetal Trades Welder, and Pipe Trades Welder. People in many apprenticeship programs are required to take welding classes as part of their training.

With additional education and/or work experience, graduates may find other opportunities for employment.

- Journeylevel Welder
- Welding Inspector
- Welding Supervisor
- Journeylevel Welder/Fabricator

Certification

All NWTC Welding Program instructors are certified welders.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

31-421-335 BLUEPRINT READING FOR WELDERS 1 ...course provides the opportunity for the learner to develop the knowledge and understanding of orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, metric conversation and interpretation of fabrications from prints (Prerequisite: Accepted into Welding or Marine Construction program)

31-421-336 WELD SYMBOLS ...course provides the opportunity for the learner to develop the knowledge and understanding of welding symbols AWS and ISO, weld joint nomenclature and welding joint geometry. (Prerequisite: Accepted into Welding or Marine Construction program)

31-421-337 BLUEPRINT READING FOR WELDERS 2 ...course provides the opportunity for the learner to develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings (Prerequisites: 31-421-335, Blueprint Reading for Welders1; 31-421-336, Weld Symbols)

31-422-310 METALLURGY ...manufacture of iron and steel, mechanical and physical properties of metals, metal identification, macro and microscopic grain structures, welding metallurgy, applied heat treating processes, and weld failures and fractures.

31-442-301 MATERIAL CUTTING APPLICATIONS...visual inspection of weld and cut edges, manual and machine oxy fuel gas cutting, air carbon arc cutting, plasma arc cutting, and mechanical cutting methods. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-329 FLUX CORED ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of surfacing welds in the flat position as well as fillet and groove welds in the flat, horizontal position using gas shielded flux cored arc welding. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-330 FLUX CORED ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of fillet and groove welds in the vertical and overhead position on plate and pipe welds using gas shielded flux cored arc welding. (Corequisite: 31-442-329, Flux Cored Arc Welding 1)

31-442-337 METAL FABRICATION I (LAYOUT) ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of basic line and angle construction along with flat pattern development for radial line, parallel line, and triangulation (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-338 METAL FABRICATION II (EQUIPMENT) ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of general fabrication equipment, safety and operation used for sawing, bending, shearing, drilling and punching. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-339 METAL FABRICATION III (ADVANCED ASSEMBLY) ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of building projects from advanced blueprints using all fabrication equipment. (Prerequisites: 31-442-337, Metal Fabrication I; 31-442-338, Metal Fabrication II)

31-442-340 FLUX CORED ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of fillet and groove welds in the flat, horizontal and vertical position using self-shielded flux cored arc welding and metal cored electrodes and sub arc equipment. (Corequisite: 31-442-330, Flux Cored Arc Welding 2)

31-442-342 SHIELDED METAL ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of surfacing welds in the flat position, fillet and groove welds on plain carbon steel. (Corequisite: 31-442-301, Material Cutting Applications)

31-442-343 SHIELDED METAL ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the horizontal and vertical positions, fillet and groove welds on plain carbon steel. (Corequisites: 31-442-342, Shielded Metal Arc Welding 1; 31-442-301, Material Cutting Applications)

31-442-347 SHIELDED METAL ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the horizontal, vertical, overhead positions on groove welds with and without backing and overhead T-Joints on plain carbon steel. (Corequisites: 31-442-301, Material Cutting Applications; 31-442-343, Shielded Metal Arc Welding 2)

31-442-348 GAS METAL ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welding in the flat and horizontal positions, fillet, pipe to plate and groove welds on plain carbon steel. (Corequisite: 31-442-301, Material Cutting Applications)

31-442-349 METAL FABRICATION - RIGGING ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of general fabrication rigging that would be used in a shop and job site application. (Prerequisite: Accepted into Welding or Marine Construction program)

31-442-356 GAS METAL ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the vertical and overhead positions, fillet, pipe to plate and groove welds with and without backing on plain carbon steel. (Corequisites: 31-442-301, Material Cutting Applications; 31-442-348, Gas Metal Arc Welding 1)

31-442-358 GAS METAL ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of welds in the flat and horizontal positions on T-Joints (1F & 2F) and groove welds with backing (1G & 2G) on plain carbon steel using the spray mode of transfer and on aluminum. (Corequisites: 31-442-301, Material Cutting Applications; 31-442-356, Gas Metal Arc Welding 2)

31-442-359 GAS TUNGSTEN ARC WELDING 1 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of GTAW equipment set-up as well as the basic skills needed to make welds on plain carbon steel. Weld quality will be discussed but this course is only used to understand the basics of the GTAW process. (Prerequisites: Accepted into Welding or Marine Construction program; 31-442-301, Material Cutting Applications)

31-442-362 GAS TUNGSTEN ARC WELDING 2 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of making groove and fillet weld on sheet metal with plain carbon steel, 3XX stainless steel. Weld quality will be emphasized with all lab assignments (Prerequisite: 31-442-301, Material Cutting Applications; Corequisite: 31-442-359, Gas Tungsten Arc Welding 1)

31-442-363 GAS TUNGSTEN ARC WELDING 3 ...course provides the opportunity for the learner to develop the knowledge, skills, process and understanding of GTAW on aluminum as well as multipass groove welds on plain carbon steel. (Prerequisite: 31-442-301, Material Cutting Applications; Corequisite: 31-442-362, Gas Tungsten Arc Welding 2)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The focus of the Wellness and Health Promotion associate degree is to prepare graduates to work as prevention and interventional wellness professionals. Wellness professionals will reduce the occurrence and recidivism of illness, injury and disease by helping others implement lifestyle changes through the effective application of wellness education and coaching in the home or workplace. Wellness is the dynamic process of becoming aware of and making choices toward a more positive balanced and healthy lifestyle. Health Promotion progressively generates interest for the accomplishment and advancement of health. Health and wellness professionals facilitate a partnership and change process that enables clients to change their mindsets, and develop and sustain behaviors proven to improve health and well-being, going beyond what they have been able to do alone. This program will meet the emerging demand for health and wellness professionals in Northeast Wisconsin.

Program Outcomes

- Utilize the dimensions of wellness to coordinate health and wellness events.
- Perform health and wellness assessments including fitness testing, body composition assessment, blood pressure screening, diet analysis, and health risk assessments.
- Explain the causes of chronic disease and how to prevent and manage chronic disease through lifestyle and behavior modification.
- Plan, implement, and evaluate corporate, community, or individual wellness plans.
- Employ holistic wellness coaching strategies to implement behavior modification and lifestyle change in clients.
- Assess personal fitness levels and prescribe exercise intervention plans.
- Lead and evaluate personal and group exercise sessions.
- Develop, deliver, and evaluate health and wellness educational sessions to small and large groups.
- Analyze key behaviors and implement social marketing campaigns designed promote healthy lifestyles.
- Create a culture of wellness among key customer groups.

Requirements for Program Entry

- The Wellness and Health Promotion program incorporates an emphasis in either Wellness Coaching or Exercise Science. Students will need to declare their emphasis of choice during the 2nd semester.

Employment Potential

A graduate of the Wellness and Health Promotion program will have the potential for employment in a corporate, community, fitness, or healthcare setting as a:

- Wellness/Health Coach
- Health and Fitness Specialist
- Wellness and Health Promotion Coordinator
- Personal Trainer
- Customer Care Specialist
- Community Health Educator

Clinical Experience

- Students will be required to purchase a uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances and participate in weekend rotations.
- Students are required to complete an American Heart Association Health Care Provider CPR course prior to clinical experiences. Students are required to maintain a current CPR card to comply with affiliating agency requirements.
- Students will be required to submit immunization documentation. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Students will be required to show proof of an annual flu vaccine.
- Students may be required to complete drug testing and/or finger printing by clinical agencies.

Requirements for Program Application

- Completed application.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Admissions Assessment or equivalent or ACT assessment taken with the last five years. (For a list of equivalents, please contact a Counselor.)
- Two semesters High School, or one semester in College of: Algebra and Chemistry (with a lab component). All required course grades must be completed with a "C" or better.

Requirements for Program Entry

- As a requirement for program entry, an Academic Skills Assessment (Accuplacer or ACT) with appropriate benchmark scores is necessary. Accuplacer benchmarks are Arithmetic, 90; Reading Comprehension, 90; Sentence Skills, 95. ACT benchmarks are Math, 18; Reading, 21; English, 21. Applicants not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Upon completion of the plan, full program or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact an advisor at (920) 498-5444 or (888) 385-6982.
- Attend mandatory program orientation.
- Complete caregiver background check. A fee is charged for this service. Additional information will be provided upon acceptance into the program.
- Complete a Functional Abilities Inventory.

Suggested Skills for Success

Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Curriculum

Students following the study plan below will complete the Wellness & Health Promotion associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
*10-546-101	Personal Wellness & Fitness	3
*10-546-102	Chronic Diseases/Health Issues	3
10-801-136	English Composition 1	3
++10-806-177	Gen Anatomy & Physiology	4
10-809-188	Developmental Psychology	3
**10-890-101	College 101	1
SEMESTER TOTAL		17

SECOND SEMESTER		
*10-546-103	Health & Nutrition	3
*10-546-104	Intro to Wellness Coaching	3
*10-546-105	Wellness Kinesiology	4
*10-546-108	Wellness Practicum I	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		16

THIRD SEMESTER EXERCISE SCIENCE TRACK		
*10-546-107	Stress Management Techniques	2
*10-546-106	Wellness Programming/Design	3
*10-546-109	Exercise Physiology	3
*10-546-110	Exercise/Performance Nutrition	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		14

COACHING TRACK		
*10-546-107	Stress Management Techniques	2
*10-546-106	Wellness Programming/Design	3
*10-546-111	Coaching & Interviewing Tech	3
*10-546-112	Wellness Coaching Psychology	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		14

FOURTH SEMESTER EXERCISE SCIENCE TRACK		
*10-546-113	Wellness Marketing/Technology	3
*10-546-114	Wellness Practicum 2	3
*10-546-115	Exercise Testing/Prescription	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		15

COACHING TRACK		
*10-546-113	Wellness Marketing/Technology	3
*10-546-114	Wellness Practicum 2	3
*10-546-116	Coaching for Behavior Change	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		15
TOTAL CREDITS		62

CURRICULUM NOTE

*No final grade lower than a "C" is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a "C" in a program course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

++No final grade lower than a "B" is acceptable in General Anatomy & Physiology. A student who withdraws or receives a grade lower than a "B" in this course may apply for re-entry into the program. Consideration for re-entry will be at the discretion of the re-entry team and will be dependent on clinical availability.

**The credit for 10-890-101, College 101 is an Institutional Requirement for graduation. Consequently, it is not part of the program credit requirements.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-546-101 PERSONAL WELLNESS & FITNESS ...this course introduces the seven-dimension model of wellness. Learners will apply the seven dimensions of wellness to develop and implement a personal wellness plan. (Prerequisite: Accepted in the Wellness & Health Promotion program)

10-546-102 CHRONIC DISEASES & OTHER HEALTH ISSUES ...this course addresses the incidence and cost of chronic disease and other modern health issues. Study the four major causes of chronic disease (lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption). Emphasis is placed on the prevention and management of these health issues through behavior change and lifestyle wellness. (Prerequisite: Accepted in the Wellness & Health Promotion program)

10-546-103 HEALTH & NUTRITION ...this course introduces the relationship and impact of nutrition and health. Learners will understand dietary guidelines and create and monitor nutrition plans.

10-546-104 INTRODUCTION TO WELLNESS COACHING ...this course will introduce the concept of wellness coaching utilizing the seven dimensions of wellness model. Learners will apply wellness coaching principles to facilitate behavior and lifestyle change.

10-546-105 WELLNESS KINESIOLOGY & PATHOLOGY ...this course studies the musculoskeletal system and major muscle groups and their response to movement and exercise. Also introduces disorders that can occur in major body systems with signs, symptoms and associated pharmacology. (Prerequisite: 10-806-177, General Anatomy & Physiology with a "B" or better)

10-546-106 WELLNESS PROGRAMMING & DESIGN ...learners will design, develop, and deliver corporate and community wellness initiatives such as health risk assessments, wellness incentive programs, or health educational sessions. Learners will develop needs assessments, goals, objectives and evaluation measures with an emphasis on writing and presentation skills.

10-546-107 STRESS MANAGEMENT TECHNIQUES ...understand the effects of stress on personal well-being. Learn, assess, and apply stress management techniques (relaxation, guided imagery, deep breathing techniques, and other holistic methods) for personal and client utilization.

10-546-108 WELLNESS PRACTICUM 1 ...provides students with a structured practicum experience applying wellness coaching and programming skills. (Prerequisite: 10-546-101, Personal Wellness & Fitness)

10-546-109 EXERCISE PHYSIOLOGY ...develops an understanding of the functionality and responses of cardiovascular and strength training exercise on the human body. (Prerequisite: 10-546-105, Wellness Kinesiology & Pathology)

10-546-110 EXERCISE & PERFORMANCE NUTRITION ...develops knowledge of how nutrition impacts performance and exercise. The course will examine nutritional and dietary fads, programs, and supplements. (Prerequisite: 10-546-103, Health & Nutrition)

10-546-111 COACHING & INTERVIEWING TECHNIQUES ...apply listening and interviewing techniques to assess wellness levels and to facilitate health-related information exchange between the wellness practitioner and client. (Prerequisite: 10-546-104, Introduction to Wellness Coaching)

10-546-112 WELLNESS COACHING PSYCHOLOGY ...develops an understanding of various psychological factors in the causes and treatment of chronic disease. Emphasis will be placed on factors leading to poor health choices and resistance to lifestyle change. (Prerequisite: 10-546-104, Introduction to Wellness Coaching)

10-546-113 WELLNESS MARKETING & TECHNOLOGY ...create and develop wellness marketing and promotion strategies to enhance customer and client participation in individual and group related wellness programming opportunities. Utilize technology and social media to promote wellness initiatives.

10-546-114 WELLNESS PRACTICUM 2 ...provides students with an advanced practicum experience applying wellness coaching and programming skills. (Prerequisite: 10-546-108, Wellness Practicum 1)

10-546-115 EXERCISE TESTING & PRESCRIPTION ...apply exercise theory to assess and develop interventional wellness-related exercise programs for individuals and groups. Assess exercise risk factors and implement safety measure to assure client safety. (Corequisites: 10-546-109, Exercise Physiology; 10-546-110, Exercise and Performance Nutrition)

10-546-116 COACHING FOR BEHAVIOR CHANGE ...utilize wellness coaching techniques to identify lifestyle issues or problems, set goals, motivate clients, track progress, and implement life-long behavior change. (Corequisites: 10-546-111, Coaching & Interviewing Techniques; 10-546-112, Wellness Coaching Psychology)

Wind Energy Technology Program Code 104821 | Associate Degree

A Lakeshore Technical College program offered at Northeast Wisconsin Technical College. For information call Toll-free: (888) 385-6982.

This program is eligible for financial aid ONLY through Lakeshore Technical College.

Program Description

The wind energy industry is the fastest growing segment of renewable energy production. The U.S. and Canadian commercial wind farms are experiencing annual growth of 25%. Employers seek skilled technicians for operation and maintenance activities in local wind farm settings. There is also intense demand for upper-level technicians within U.S. and international wind turbine manufacturers; these include: installation technician, quality control technician, and warranty and commissioning technicians.

Operation and maintenance positions remain with a given wind farm location; other technicians travel extensively with the development of new wind farms and repair/ retrofitting of wind farms around the world.

Program Outcomes

- Install, test, service and repair wind turbine components.
- Troubleshoot and maintain control and PLC systems.
- Troubleshoot and maintain SCADA systems.
- Wear PPE for climbing and identify safety practices for climbing.
- Practice safe wind turbine tower climbing skills.

Requirements for Program Entry

- Completed application at Lakeshore Technical College - www.gotoltc. edu or (888) 468-6582.

Employment Potential

- Wind Turbine Technician/ Mechanic/Tower Climber
- Installation Technician
- Operation and Maintenance Technician
- Wind Farm Maintenance Manager

About Shared Programs

- Contact Lakeshore Technical College for all Benchmarks.
- Limited space available for enrollment.
- Summer courses are only offered at LTC.
- Students can take NWTC courses without being enrolled in the program.

Curriculum

The Wind Energy Technology Associate Degree is a two-year, six-semester collaborative program between Lakeshore Technical College and Northeast Wisconsin Technical College. Students will attend classes on the Green Bay campus during the fall and spring semesters and will take part in summer semester courses at LTC. Students following the study plan below will complete the Wind Energy Technology associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
*10-413-110	Energy Introduction to	2
10-482-130	Energy-Intro to Wind	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-104	DC 1: Introduction	1
10-660-105	DC 2: Circuits	1
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		**15**

SECOND SEMESTER		
10-620-121	Mechanics 1: Basic	1
10-620-140	Machine Wiring and Safety	1
10-620-166	Fluids 4: Advanced Hydraulics	1
10-660-102	Digital 2: Sequential	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-664-102	Automation 3: PLC	1
***10-801-136	English Composition 1	3
10-804-196	Trigonometry w Apps	3
SEMESTER TOTAL		**16**

SUMMER SEMESTER		
**10-449-113	Wind Technician Health & Sfty	2
**10-482-120	Wind Technician 1 Lab	1
**10-482-122	Wind Technician 2	1
**10-482-124	Wind Technician 3	1
SEMESTER TOTAL		**5**

THIRD SEMESTER		
10-103-131	Micro: Excel-Intro	1
10-605-158	Power Electronics 2: Drives	1
10-620-122	Mechanics 2: Intermediate	1
10-620-123	Mechanics 3: Systems	1
10-620-161	Power Electricity 1: Motors	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-664-160	Control 1: Discrete Systems	1
10-664-161	Control 2: Process Systems	1
10-664-162	Control 3: Motion Systems	1
10-806-143	College Physics 1	3
SEMESTER TOTAL		**13**

FOURTH SEMESTER		
10-664-105	Automation 6: PLC	1
10-664-151	Automation 8: HMI	1
10-664-163	Control 4: Drive Performance	1
10-664-164	Control 5: Servo Systems	1
10-664-165	Control 6: Servo Systems	1
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**14**

SUMMER SEMESTER		
**10-442-109	Wind Turbine Struc Weld Inspec	1
**10-482-126	Wind Technician 4	3
**10-482-128	Wind Technician 5	2
**10-482-132	Small Turbine Maint Assessment	2
SEMESTER TOTAL		**8**
TOTAL CREDITS		**71**

CURRICULUM NOTE
NWTC will offer live courses on our campus with the following exceptions: courses noted with (*) are LTC Broadcast Captioning to NWTC-GB and courses noted (**) are offered only at LTC.

*** Students completing 10-801-136, English Composition 1 at NWTC must earn a grade of "C" or better to enroll in 10-801-197, Technical Reporting.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Windows experience improves success; consider 10-103-111, Windows/Computer Basics.

10-413-110 ENERGY INTRODUCTION TO ...provides participants with an overview of electrical energy generation and distribution. Topics include electricity from the following systems: photovoltaic, wind, coal-fired, hydro, and natural gas. Career awareness for maintenance technicians and plant operators is explored.

10-442-109 WIND TURBINE STRUCTURAL WELD INSPECTION ...provides wind energy students with theory and practice to perform structural weld assessments on towers and turbine components. Topics include part location from prints, visual inspection, weld theory, fault determination, documentation, and action items. (Prerequisite: 10-482-130, Energy-Intro to Wind and 10-482-001, Wind Technician 1 Lab)

10-449-113 WIND TECHNICIAN HEALTH & SAFETY ...familiarizes students with the Federal Safety and Health Regulations (OSHA) related to the wind power industry. It introduces the student to proper methods and procedures to eliminate and control hazards to potential injury/illness in the industry. Students will receive training in first aid, CPR, rigging, and confined space and will receive a 30-hour OSHA for General Industry certification upon completion of the course.

10-482-120 WIND TECHNICIAN 1 LAB ...prepares the learner for work at heights. Students will perform equipment maintenance on climbing and fall arrest gear; wear required PFPE, PPE and outdoor apparel when working on a wind energy system; review the causes and results of workplace accidents and injuries; demonstrate adequate health and wellness for climbing and working at heights; demonstrate safe climbing methods; demonstrate proper "ground crew" working habits; and tie basic rigging knots.

10-482-122 WIND TECHNICIAN 2 ...will give the learner ENSA certification in safe access, rescue and confined spaces. The learner will receive current legislation and requirements for work at heights; complete a risk assessment; demonstrate proper rigging techniques for rescue equipment; perform a ladder rescue; perform rescues from a wind turbine nacelle, hub and glade; perform a self-rescue; complete a confined space permit; assemble and test a respirator; and use a monitor to test air quality.

10-482-124 WIND TECHNICIAN 3 ...certifies the learner in torque techniques through Snap-On Tools. The student will apply safe and proper technique with use of a click-type torque wrench, dial-type torque wrench, torque screwdriver, torque adapter, and torque extensions; verify appropriate torque techniques on electronic test bench; apply proper technique with the Techangle* wrench; and demonstrate safe and proper torque technique using the Hytorc* equipment.

10-482-126 WIND TECHNICIAN 4 ...strengthens the electromechanical skills of the learner by reviewing arc flash requirements, power quality, power factor correction, transformer calculations, and electrical distribution and transmission systems. Students will explore drive trains used in wind turbines; analyze the causes and results of gear failures; demonstrate proper techniques for gearbox and generator alignment; and compare and contrast synchronous and induction generators.

10-482-128 WIND TECHNICIAN 5 ...will have the learner working with data collected from wind energy systems at LTC using Microsoft Excel, wind energy calculators, and MET tower software. Participants will determine energy production, wind speeds, and wind direction; produce power curves; calculate wind shear; analyze rotor wash, estimate availability and capacity factor of a wind system; estimate payback and return investment for wind systems, and create charts and graphs to summarize the data.

10-482-132 SMALL TURBINE MAINTENANCE ASSESSMENT ...prepares the learner for servicing a variety of small wind turbines. Participants will climb and inspect towers, torque fasteners, check lubrication in gearboxes, add grease to moving and exposed parts, verify good electrical connections and perform an overall "system check" on a wind energy system as part of routine maintenance. Covers techniques and details involved in a thorough site assessment using industry quality standards. Travel is required. (Prerequisite: 10-482-001, Wind Technician 1 Lab)

10-482-130 ENERGY-INTRO TO WIND ...an overview of the basics of wind energy. Topics will include wind resources, basic system components, system types, turbine types, applications and tower types.

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors.

10-620-100 FLUIDS 1: BASIC PNEUMATICS ...what fluid power is, differentiate between hydraulics and pneumatics, implement basic pneumatic circuits, utilize schematics, apply Pascal's Law, define properties of fluids, implement airflow control and hydraulics cylinder circuits.

10-620-101 FLUIDS 2: BASIC HYDRAULICS ...hydraulic pumps, basic hydraulics actuator circuits, hydraulic schematics, apply Pascal's Law, summarize the effects of fluids friction, define properties of hydraulic energy, design hydraulic circuits with directional control valves. (Corequisite: 10-620-100, Fluids 1: Basic Pneumatics)

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-belt drives, synchronous belt drives, lubrication, and alignment. (Corequisite: 10-620-121, Mechanics 1: Basic)

10-620-123 MECHANICS 3: SYSTEMS ...application of correct couplings to mechanical systems, heavy-duty chain drives, maintenance of brakes and clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-140 MACHINE WIRING AND SAFETY ...introduction to machine wiring, including basic documentation, labeling, and wiring practices; an overview of NFPA 70 machinery, safety and installation standards.

10-620-161 POWER ELECTRICITY 1: MOTORS ...DC motors and generator configuration, shunt, compound, and permanent magnet DC motor performance and characteristics.

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ...design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Corequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-620-166 FLUIDS 4: ADVANCED HYDRAULICS ...components of hydraulic pump power, characteristics of fluid conductors, issues of hydraulic system maintenance, basics of hydraulic flow and pressure in pipelines, design a hydraulic system from a specification.

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simplification methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis.

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1: Logic)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, current, resistance, Ohm's Law, power and Kirchoff's Voltage Law are defined.

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions. (Prerequisite: 10-804-118, Interim Algebra w Apps OR equivalent; 10-660-104, DC 1: Intro)

10-660-107 AC 1: PROPERTIES ...introduction to the properties of capacitors and inductors including types and behavior in switching circuits. Inductor basics include a study of magnetic fields. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

10-660-108 AC 2: REACTANCE ...study of the way inductive, capacitive and resistive components behave in a circuit excited by a sine waveform. Effective and average values of the sinewave are derived. (Corequisite: 10-660-107, AC 1: Properties)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-664-100 AUTOMATION 1: CONTROL LOGIC ...electric motor control components such as switches, relays, starters, transformers; and safely mount and install motor and motor control components and perform related wiring and troubleshooting of motor control circuits.

10-664-101 AUTOMATION 2: MOTOR CONTROL ...electric motor control components such as sensors, timers and counters. (Corequisite: 10-664-100, Automation 1: Control Logic)

10-664-102 AUTOMATION 3: PLC ...basic programmable logic controller programming and troubleshooting.

10-664-103 AUTOMATION 4: PLC ...troubleshooting a PLC system, applying Event Sequencing, developing PLC applications, applying timer instructions and counter instructions. (Corequisite: 10-664-102, Automation 3: PLC)

10-664-104 AUTOMATION 5: PLC ...application, troubleshooting, and implementation of program control, math and data move instructions, analog I/O modules, and producing a PLC program from specification. (Corequisite: 10-664-103, Automation 4: PLC)

10-664-105 AUTOMATION 6: PLC ...programming a PLC system to operate a discrete and analog process adhering to a functional specification or timing diagram. (Prerequisite: 10-664-104, Automation 5: PLC)

10-664-151 AUTOMATION 8: HMI ...the functions of Human Machine Interface, Operator Interface Terminal software and generation of PLC program and screens adhering to written specification using Operator Interface Terminal and PLC software. (Corequisite: 10-664-105, Automation 6: PLC)

10-664-160 CONTROL 1: DISCRETE SYSTEMS ...applications and utilization of motion feedback devices, force measurement devices, temperature sensors, and fluid measurement devices. (Prerequisite:10-664-102, Automation 3: PLC OR 10-664-104, Automation 5: PLC)

10-664-161 CONTROL 2: PROCESS SYSTEMS ...Open-loop versus closed-loop systems, industrial control systems, two-position control and its applications, PID control and its applications, and relationship between process response and proper mode of control. (Corequisite: 10-664-160, Control 1: Discrete Systems)

10-664-162 CONTROL 3: MOTION SYSTEMS ...hydraulic and pneumatic proportional/servo valves, servo motors, configuration and programming of an analog motion control system. (Corequisite: 10-664-161, Control 2: Process Systems)

10-664-163 CONTROL 4: DRIVE PERFORMANCE ...DC and AC drive system performance, specification of AC and DC drive control methods for given application, and integration of a drive system into a control network. (Prerequisite: 10-664-161, Control 2: Process Systems)

10-664-164 CONTROL 5: SERVO SYSTEMS ...motion control troubleshooting and fault recovery, advanced motion control programming, integration of motion control system and motion control network. (Corequisite: 10-664-163, Control 4: Drive Performance)

10-664-165 CONTROL 6: SERVO SYSTEMS ...development and verification of motion control components and programming given description of operation, and leading technologies for advanced motion control. (Corequisite: 10-664-164, Control 5: Servo Systems)

Offered at the Green Bay campus.
For information: (920) 498-5444.
Toll-free: (888) 385-6982.

This program is fully eligible
for financial aid.

Program Description

The Winemaking (Enology) Associate Degree will train both current and future employees of wineries in the grape and wine industry. Students will gain Enology skills such as fermentation, clarification, and aging of juice and wine; lab methodologies; sanitization; quality control; winery equipment operation, grape maturity testing; wine and must analysis. NWTC will partner its resources with the Viticulture and Enology Science and Technology Alliance (VESTA). The Winemaking (Enology) technical courses will be taught in conjunction with the VESTA Alliance through a combination of online learning and field experiences. The Winemaking (Enology) program will provide students with an internship at a local winery, offering an intense level of practical and realistic winery experiences sufficient to equip them with the skills and work experience required for a position in the wine industry.

Program Outcomes

- Examine grape samples to ascertain sweetness and acidity of crop, and determine harvest time based off of this information.
- Select yeasts for fermentation and barrels for aging.
- Communicate with vineyard manager regarding crop load, harvest time, and other issues related to crop quality.
- Correct sugar and acid levels of must and wine if necessary.
- Oversee primary fermentation by punching down the grape skin cap, regulating fermentation temperature and the amount of time the skins are in contact with the must, and initiating malolactic fermentation.
- Supervise workers in crushing and pressing processes, or perform those duties themselves.
- Supervise cellar operations during secondary fermentation with tasks such as aging, topping off barrels, and clearing wine of fermentation residue.
- Direct and coordinate blending and bottling of wine, or perform those duties themselves.

Requirements for Program Entry

- Completed application.

- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.
- As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic: 34; Reading Comprehension: 55; Sentence Skills: 60. Students not meeting these benchmarks or the equivalent will be required to establish an individualized academic plan. Students may have the opportunity to enroll in selected program core courses while completing their individualized plan. Upon completion of the plan, students will be eligible for all program courses. However, higher test scores will lead to greater success in core program courses. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Employment Potential

A graduate of this program will have the basic skills necessary to own and operate or be employed at a Winery as a:

- Winemaker
- Winemaking Assistant
- Cellar Worker
- Tasting Room Host

With additional education and/or work experience, graduates may find other opportunities for employment.

- Scientific Industry, Laboratory
- Food Science Industry - Food Safety

Note

- NWTC has partnered with Missouri State University, Missouri State University-West Plains, Northeast Iowa Community College, Redlands Community College, Rend Lake College, South Plains College, Arkansas Tech University-Ozark Campus, Kent State University-Ashtabula, Highland Community College, Central Lakes College, Michigan State University, and Ivy Tech Community College to offer an Associate Degree in Winemaking (Enology). The partnership is formally referred to as the Viticulture and Enology Science and Technology Alliance, or VESTA. The partnered colleges individually deliver VESTA classes through various online delivery formats.
- Students desiring to earn an Associate Degree in Winemaking (Enology) must apply for admission to NWTC and must take a minimum of 25% of technical core courses at NWTC.

Curriculum

Students following the study plan below will complete the Winemaking (Enology) associate degree in the number of semesters shown.

FIRST SEMESTER		CREDITS
VIN146	Intro to Enology	3
VIN210	Intro to Wine Microorgs	3
*VIN105	Molec Prin Grape/Wine	4
*10-145-185	Organizing Your Small Business	3
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		17

SECOND SEMESTER		
VIN148	Winery Sanitation	3
VIN160	Winery Equip Operation	2
VIN290	Winery Safety	2
*10-145-189	Writing a Business Plan-Sm Bus	3
10-801-136	English Composition 1	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		16

THIRD SEMESTER		
VIN246	Intermediate Enology	2
VIN257	Fall Wine Prod Intern	3
VIN268	Wine/Must Analysis	3
10-801-198	Speech	3
10-999-923	Elective	3
SEMESTER TOTAL		14

FOURTH SEMESTER		
VIN259	Cellar Ops Technology	2
VIN266	Sensory Evaluation	3
VIN247	Spring Inter Enology	2
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		13
TOTAL CREDITS		60

CURRICULUM NOTE
*These courses must be taken at NWTC to receive an Associate Degree.

SUGGESTED ELECTIVES
- Soils for Viticulture, VIN293
- Intro to Viticulture and Vineyard Establishment, VIN 111
- Integrated Pest Management, VIN 211

- The VESTA online courses, identifiable by ìVINî in front of the course code have a separate admission and registration process.
- Practicum sites throughout the state are listed on the VESTA website. New ones can be added if the student finds a willing and eligible vineyard.
- Some courses have a minimum age requirement.
- Further information on VESTA can be found on the website www.vesta-usa.org.

COURSE DESCRIPTIONS

These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-145-185 ORGANIZING YOUR SMALL BUSINESS ...the components of small business ownership; examining a variety of small business startup and operation scenarios. Assesses your own readiness to begin the entrepreneurial adventure.

10-145-189 WRITING A BUSINESS PLAN-SMALL BUSINESS ...as a necessary component to beginning a small business, from addressing facets of the business plan, observing various types of plans, to realizing readiness to begin. Plan preparation/presentation are required.

VIN 146 INTRODUCTION TO ENOLOGY ...learn the basic science and technology of winemaking. Make wine from a kit, track fermentation, make various chemical measurements and provide one bottle of finished wine for evaluation. (Students must be 21 years of age to enroll in this course.)

VIN 148 WINERY SANITATION ...covers methods used for sanitizing the premises, tanks, pumps, filters, oak barrels, and sampling equipment, including chemical agents, reagents, and thermal treatments leading to sterile bottling. Environmental issues and compliance also addressed. (Recommendation: VIN 146, Introduction to Enology or permission)

VIN 160 WINERY EQUIPMENT OPERATION ...overview of winemaking including operations and equipment, barrel aging and management, membrane separation processes, workplace safety, and specialized contacting, cleaning, sanitation, process control, refrigeration, air conditioning, humidity, electrical, wastewater, solid waste handling systems. (Recommendation: VIN 146, Introduction to Enology or permission)

VIN 210 INTRO TO WINE MICROORGANISMS ...learn about the variety of microorganisms frequently encountered in the wine-making process both beneficial and harmful including identification, physiology, morphology, and biochemistry of various wine microorganisms.

VIN 246 INTERMEDIATE ENOLOGY ...the science and technology of winemaking intended for experienced intermediate winemaker or winery employee interested in career development, or advanced home winemaker seeking new challenges. Basic organic chemistry, microbiology, and some mathematics familiarity are recommended. (Prerequisite: VIN 146, Introduction to Enology or permission)

VIN 257 FALL WINE PRODUCTION INTERNSHIP ...hands-on instruction for the individual anticipating a career in the wine industry who has completed major course sequences. Experience an intense level of practical and realistic winery operation during crush season. (Prerequisites: VIN146, Intro to Enology; VIN148, Winery Sanitation; VIN160, Winery Equipment; Corequisite: VIN246, Intermediate Enology, or permission)

VIN 259 CELLAR OPERATIONS TECHNOLOGY ...get onsite experience learning techniques associated with finished wine production. Learn wine transfer, wine fining, cold stabilization, wine clarification, blending of wines, and bottling. (Prerequisite: VIN257, Wine Production Internship or permission)

VIN 268 WINE AND MUST ANALYSIS ...analysis regarding grape juice and wine are chosen for laboratory exercises and demonstrate various chemical, physical, and biochemical methods. Students will participate in workshops and hands-on experiences at participating wineries. (Prerequisites: VIN146, Intro to Enology; VIN105, Molecular Principles in Grape & Wine, or permission.)

VIN 266 SENSORY EVALUATION ...develop an understanding of the principles of sensory evaluation used in commercial wine making. Students will utilize sensory kits and workshops to further sensory evaluation skills and techniques. Students must be 21 years of age to enroll in this course. (Prerequisite: VIN 146, Introduction to Enology or permission)

VIN 290 WINERY SAFETY ...an introduction to safety and procedures specific to enology including general history of food and beverage safety and health issues, ergonomics, OSHA safety rules and safety issues and concerns specific to the winery.

VIN 105 MOLECULAR PRINCIPLES IN GRAPE & WINE ...emphasis on chemical fundamentals of winemaking. This course includes organic, biochemistry, and applications with a focus on the grape and wine industry.

VIN 247 SPRING INTERMEDIATE ENOLOGY... course will focus on advanced concepts of winemaking for the experienced winemaker as it relates to post-harvest activities including blending corrections, aging of wine, clarification, fining, wine analysis, and bottling. Basic organic chemistry, microbiology, and some mathematics familiarity are recommended. [Prerequisites: VIN 146 (VIN 105 and VIN 110 recommended)]