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 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 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.

Curriculum

The Accounting Associate Degree is a two-year, four-semester program. Accelerated options offered at night. Upon graduation, a student will have completed 68 credits.

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
SEMESTER TOTAL		15

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 App	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		17
TOTAL CREDITS		68

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

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)

10-101-131 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)

10-103-121 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)

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 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 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.

Curriculum

The Accounting Assistant Technical Diploma is a one-year, two-semester program. Accelerated options offered at night. Upon graduation, a student will have completed 30 credits.

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
SEMESTER TOTAL		15

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		30

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

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)

10-101-151 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)

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

• Communicate business messages effectively.
• Prioritize and manage workflow.
• Select appropriate technology to perform office tasks and manage information.
• Use efficient techniques and appropriate resources in a business environment.
• Plan events, travel, conferences, and meetings.
• Research, analyze, and present information.
• Integrate appropriate software to produce effective business documents.
• Demonstrate professionalism in a business environment.
• Contribute to team process using leadership principles.

Requirements for Program Entry

• Completed application.
• High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
• Basic math.
• A minimum keyboarding skill of 20 WPM using the TOUCH method is recommended.
• 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, 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 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 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.

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.
• 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

Curriculum

The Administrative Professional Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

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
10-106-112	Keyboard-Speed Building 2	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		**17**

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	2
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
10-801-136	English Composition 1	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-103-132	Micro: Excel-Part 2	1
10-103-142	Micro: Access-Part 2	1
10-103-163	Micro: Expression Web	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
	Elective	2
SEMESTER TOTAL		**18**

FOURTH SEMESTER		
10-101-103	Accounting Principles-Applied	2
10-106-137	Integrated Software Applic	2
10-106-199	Admin Prof Intern Practicum	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
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
Oral/Interpersonal Communication, 10-801-196

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.

10-102-100 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.

10-103-132 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.

10-106-102 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.

10-106-112 KEYBOARD-SPEED BUILDING 2 ...skill development on the alphabetic keyboard, top-row number keys, and 10-key pad using analytic/ diagnostic software. Requires touch keyboarding at 45 wpm. (Corequisite: 10-106-107, Keyboard-Speed Building 1)

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 prioritizing and organizational skills, workplace mail and copying, meeting coordination, and creating effective business communication using appropriate formats and variety of application tools. (Prerequisite: 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 create error-free business documents. Introduction to and use of reference resources and portfolio guidelines.

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: 10-106-112, Keyboard-Speed Building 2; 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 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. (Prerequisites: 10-106-127, Administrative Business Procedures 1; 10-801-136, English Composition I; 10-804-123, Math w Business Apps; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

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.
• 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.
• Proof of current health status and immunizations.
• NWTC is required to comply with the Wisconsin Caregiver Law.

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.

Note: 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.

Curriculum

The Advanced Emergency Medical Technician program is a one-semester program. Upon graduation, a student will have successfully completed two credits and earned a Technical Diploma. This course is 168 hours in length.

FIRST SEMESTER	CREDITS
30-531-340 EMT-Intermediate Technician	2
SEMESTER TOTAL	2
TOTAL CREDITS	2

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.

COURSE DESCRIPTIONS

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

30-531-340 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.

Applied Engineering Technology   Program Code 106237 | 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 program is designed to prepare
technicians and team members for
entry-level work in manufacturing.
In today's competitive environment,
there is a need for specialized training
in a variety of manufacturing areas.

Program Outcomes
• Perform safe work practices.
• Understand and apply basic
  electromechanical skills.
• Describe the role of an operator
  in a manufacturing industry.
• Solve typical manufacturing
  process-related problems.
• Communicate and perform
  in a team environment.
• Understand and apply knowledge
  of Lean Manufacturing.
• Understand basic business
  ethics and finance.

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.

Employment Potential
Graduates of this program will have
potential for employment in the
manufacturing industry as entry level
process team members or operators.

Curriculum
The Applied Engineering Technology
Associate Degree program is a two-year,
four-semester program. Upon graduation,
all students will have completed 64 credits.

FIRST SEMESTER		CREDITS
10-420-171	Machine Tool Processes 1	1
10-442-150	Machine Fabrication 1	1
10-449-111	Manufacturing Safety	3
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-105	Rigging Systems 1	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

SECOND SEMESTER		
10-196-199	Business Ethics	3
10-420-172	Machine Tool Processes 2	1
10-442-151	Machine Fabrication 2	1
10-623-156	Manufacturing Processes	2
10-664-102	Automation 3: PLC	1
10-804-118	Interm Algebra w Apps	4
10-809-195	Economics	3
	Elective	2
SEMESTER TOTAL		17

THIRD SEMESTER		
10-196-189	Team Building/Prob Solve	3
10-605-158	Power Electronics 2: Drives	1
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-620-140	Machine Wiring and Safety	1
10-620-161	Power Electricity 1: Motors	1
10-620-162	Power Electricity 2: Motors	1
10-660-104	DC 1: Introduction	1
10-801-197	Technical Reporting	3
10-806-143	College Physics	1
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-101-184	Business Finance/Budgeting	3
10-182-110	Lean Operations Mgmt	3
10-623-157	Process Instrumentation	3
10-809-103	Think Critically & Creatively	3
10-809-172	Race Ethnic & Diversity	3
SEMESTER TOTAL		15
TOTAL CREDITS		64

SUGGESTED ELECTIVES	
10-103-111	Micro: Windows Intro
10-804-107	College Math
10-196-192	Managing-Quality
10-106-145	Keyboarding

COURSE DESCRIPTIONS

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

**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)

**10-182-110 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.

10-196-199 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.

**10-420-171 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. (Prerequisite: 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)

10-449-111 MANUFACTURING SAFETY
...safety topics and practices specifically
related to industrial work environments,
personal protective equipment, and methods
to reduce the risk of personal injury.

**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)

**10-620-140 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)

**10-623-156 MANUFACTURING
PROCESSES** ...manufacturing operator
orientation, operator roles, responsibilities
and expectations, production processes and
equipment, general product handling.

**10-623-156 PROCESS
INSTRUMENTATION** ...covers
instruments and instrumentation
used in the process industry, control
systems, and basic troubleshooting.

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.

**10-664-100 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.

Architectural Technology   Program Code 106141 | 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
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 building 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, 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.
- 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 Mechanical Technician: works under the direction and supervision of an architect or professional engineer, preparing working drawings for mechanical, 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.

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

Curriculum
The Architectural Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 65 credits.

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	Bldg Green Intro	1
10-614-222	Arch CAD Intro	2
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		17

SECOND SEMESTER		
10-614-231	Arch Revit Advanced	2
10-614-232	Struct Residential	2
10-614-240	Arch Residential	5
10-804-196	Trigonometry w Apps	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		15

THIRD SEMESTER		
10-614-250	Arch Comm Studio I	4
10-614-252	Struct 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 Comm Studio II	5
10-809-172	Intro to Diversity Studies	3
	Elective	2
SEMESTER TOTAL		18
TOTAL CREDITS		65

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

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 BLDG 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.

10-614-222 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, Archi Principles; 10-614-213, Bldg Materials; 10-614-222, Arch CAD Intro; Corequisites: 10-614-231, Arch Revit Adv; 10-614-214, Green Intro)

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 ARCHITECTURAL COMM 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 STRUCT 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 COMM 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 Comm 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 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.

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
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

Curriculum
The Auto Collision Repair and
Refinishing Technician Technical Diploma
is a two-year program. Upon graduation,
a student will have completed 59 credits.
The two NWTC Auto Collision, Repair
and Refinishing programs are organized
in a "series" of courses. The two series are:
Repair and Refinishing. Both series of
courses must be completed in which ever
program (associate degree or technical
diploma) the student elects to pursue.
A student can start in either program
(associate degree or technical diploma)
at the beginning of either series of classes
or when prerequisites are fulfilled.

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
31-801-386	Communicating Effectively	1
TOTAL CREDITS		**12**

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
10-809-166	Intro to Ethics: Theory & App	3
10-809-197	Contemporary Amer Society	3
31-801-385	Communicating-Writing	1
32-405-320	Auto Collision Ind Shadow	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	2
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**
TOTAL PROGRAM CREDITS		**59**

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 (Corequisite: 10-405-101,
Introduction to Automotive Refinishing)

**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. (Prerequisites: 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;
10-405-106, Plastics and Composites;
10-405-107, Coll Refinish Surface Prep;
10-405-108, Coll Refinish Topcoat Appl)

**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 Tint ing & 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 Structual 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 Structual 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.

**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.

**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)

**10-602-124 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. (Corequisite: 10-602-107,
Automotive Service Fundamentals or 10-
405-100, Introduction to Collision Repair)

**32-405-320 AUTO COLLISION
INDUSTRY SHADOWING** ...an
opportunity to experience the auto collision
industry working environment. Course
will facilitate student's opportunities to
meet technicians and shop owners, and
to observe all facets of the industry.

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 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.

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

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.

Curriculum

The Auto Collision Repair and Refinish Technology Associate Degree is a two-year program. Upon graduation, a student will have completed 70 credits. The two NWTC Auto Collision, Repair and Refinishing programs are organized in "series" of courses. The two series are: Repair and Refinishing. Both series of courses must be completed in which ever program (associate degree or technical diploma) the student elects to pursue. A student can start in either program (associate degree or technical diploma) at the beginning of either series of classes or when prerequisites are fulfilled.

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	2
10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
10-809-197	Contemporary Amer Society	3
TOTAL CREDITS		**17**

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	2
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**
TOTAL PROGRAM CREDITS		**70**

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 (Corequisite: 10-405-101, Introduction to Automotive Refinishing)

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. (Prerequisites: 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; 10-405-106, Plastics and Composites; 10-405-107, Coll Refinish Surface Prep; 10-405-108, Coll Refinish Topcoat Appl)

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 Tint ing & 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 Structual 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 Structual 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.

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.

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.

10-405-147 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 Emmissions)

10-405-149 AUTO COLLISION, BUSINESS PRACTICE/ ENTREPENEURSHIP ...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. (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 industry's 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, 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.

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

The Automation Engineering Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 61 credits.

FIRST SEMESTER

	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
Elective	1
SEMESTER TOTAL	**15**

SECOND SEMESTER

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

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

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	**61**

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. (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)

10-620-170 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.

10-660-102 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. (Prerequisite: 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)

10-664-100 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. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: 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)

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

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 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.

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

• 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)

Curriculum

The Automotive Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 59 credits.

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
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		**15**

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		**59**

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. (Corequisite: 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.

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. (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.

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/corequisites: 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.

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
- 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 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. Equivalent assessment scores are acceptable. 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

Curriculum

The Automotive Technology Associate Degree is a two-year, four-semester program offered on both the Green Bay and Marinette Campuses. Upon graduation, a student will have completed 70 credits.

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
10-801-136	English Composition 1	3
10-804-107	College Mathematics	3
SEMESTER TOTAL		17

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	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		19
TOTAL CREDITS		70

a vehicle compared to what the manufacturer will allow.

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. (Corequisite: 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.

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. (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.

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/corequisites: 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 not eligible for financial aid.

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
10-106-104	Realtime Reporting 1	5
10-106-144	Realtime Reporting Orientation	1
10-106-159	Legal Terminology	1
10-106-184	English for Realtime Reporters	1
10-106-804	Realtime Reporting I Lab	1
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		15

SECOND SEMESTER

10-106-105	Realtime Reporting II	5
10-106-158	Realtime Reporting Technology	2
10-106-805	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

10-106-109	Literary I-Advanced	2
10-106-128	Jury Charge I-Advanced	2
10-106-156	Testimony I -Advanced	3
10-106-809	Literary I Lab-Advanced	1
10-106-828	Jury Charge I Lab-Advanced	1
10-106-859	Testimony I Lab-Advanced	1
10-804-123	Math w Business Apps	3
OR		
10-804-107	College Mathematics	3
OR		
10-806-112	Principles of Sustainability	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-106-111	Literary II-Advanced	2
10-106-129	Jury Charge II-Advanced	2
10-106-142	Judicial Reporting Procedures	2
10-106-143	Judicial Reporting Internship	1
10-106-157	Testimony II-Advanced	3
10-106-171	Medical Reporting/Terminology	2
10-106-811	Literary II Lab-Advanced	1
10-106-829	Jury Charge II Lab-Advanced	1
10-106-857	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
Courses Required Prior to Advanced Courses:

10-106-161	Realtime Rptg Technology Adv
10-106-121	Jury Charge I-Beginner
10-106-826	Jury Charge I Lab-Beginner
10-106-122	Jury Charge II-Beginner
10-106-827	Jury Charge II Lab-Beginner
10-106-113	Literary I-Beginner
10-106-808	Literary I Lab-Beginner
10-106-114	Literary II-Beginner
10-106-810	Literacy II Lab-Beginner
10-106-153	Testimony I-Beginner
10-106-858	Testimony I Lab-Beginner
10-106-154	Testimony II-Beginner
10-106-855	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.

10-106-104 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 101061 Judicial Reporting or 321701 Broadcast Captioning or 321061 Judicial Reporting.

10-106-105 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 theory and write dictation using a realtime theory at a minimum speed of 110 wpm. Concurrent registration in Realtime Reporting 2 Lab is required. (Prerequisites: 10-106-104, Realtime Reporting 1 and 10-106-804, Realtime Reporting 1 Lab)

10-106-108 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: 10-106-105, Realtime Reporting 2)

10-106-109 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.)

10-106-111 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.)

10-106-128 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 is required.)

10-106-129 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.)

10-106-142 JUDICIAL 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.

10-106-143 JUDICIAL 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.

10-106-144 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. 101701 Broadcast Captioning program requirements met or 101061 Judicial Reporting program requirements met.

10-106-156 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.)

10-106-157 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.)

10-106-158 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.

10-106-159 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-106-171 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: 10-106-156, Testimony 1-Advanced)

10-106-184 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.

10-106-804 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, words in their singular and plural forms, prefixes and suffixes. (Concurrent registration in Realtime Reporting I is required.) CONDITION: 101701 Broadcast Captioning or 101061 Judicial Reporting or 321701 Broadcast Captioning or 321061 Judicial Reporting.

10-106-805 REALTIME REPORTING II LAB ...expands the learner's ability to write multi-syllabic words; punctuation and special symbols, short forms and phrases, prefixes and suffices; 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.)

10-106-809 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: 10-106-109, Literary I-Advanced)

10-106-811 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.)

10-106-828 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: 10-106-128, Jury Charge I-Advanced)

10-106-829 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.)

10-106-857 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.)

10-106-859 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: 10-106-156, Testimony I-Advanced)

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.)

10-170-143 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

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 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

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
- 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

The Business Management program is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER — CREDITS

Course	Title	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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER

Course	Title	Credits
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-196-189	Team Building/Prob Solve	3
10-196-193	Human Resource Mgmt	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER

Course	Title	Credits
10-101-184	Business Finance/Budgeting	3
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
10-182-110	Lean Operations Mgmt	3
10-196-191	Supervision	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		17

FOURTH SEMESTER

Course	Title	Credits
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Internship Practicum	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		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.

10-196-189	Team Building/Prob Solve
10-196-193	Human Resource Mgmt
10-182-110	Lean Operations Mgmt
10-101-184	Business Finance/Budgeting
10-104-191	Customer Service

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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. (Prerequisite: 10-801-136, English Composition I; 10-804-123, Math w Business Apps; Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

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.

10-182-110 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 - Promotions Management 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 Promotions Management 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 with an emphasis in Promotions Management 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 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
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
- 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
Business Management with an emphasis in Promotions Management is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-104-107	Marketing Comm-Integrated	3
10-104-176	Social Media Consumer Behavior	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
10-104-101	Selling Principles	3
10-104-119	Social Media Marketing	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 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		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.

10-104-176	Social Media Consumer Behavior
10-104-107	Marketing Comm-Integrated
10-104-119	Social Media Marketing
10-104-101	Selling Principles
10-104-125	Event Marketing

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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)

10-103-121 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. (Prerequisite: 10-104-110, Marketing Principles)

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.

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

Business Management - Credit & Finance
Program Code 101023-C | Associate Degree

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

Program Description
The Credit & Finance emphasis educates learners for careers as customer service representatives, personal bankers and loan officers.

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 with an emphasis in Credit & Finance 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 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
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 as credit specialists or personal bankers.

Note
- 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
Business Management with an emphasis in Credit & Finance is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-114-151	Finance-Banking Principles	3
10-114-153	Finance-Personal	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
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

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-102-160	Global Business Mgmt	3
10-102-199	Bus Mgmt Internship Practicum	2
10-114-170	Credit-Law	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		17
TOTAL CREDITS		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.

10-114-151	Finance-Banking Principles
10-114-153	Finance-Personal
10-114-166	Credit-Collection Methods
10-114-109	Credit-Policies/Procedures
10-114-170	Credit-Law

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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)

10-103-121 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.

10-114-109 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)

10-114-151 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.

10-114-166 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)

10-196-191 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 with an emphasis in Entrepreneurship 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 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
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
- 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
Business Management with an emphasis in Entrepreneurship is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-145-185	Organizing Your Small Business	3
10-145-186	Financial Management-Small Bus	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
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 Internship Practicum	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		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.
10-145-185 Organizing Your Small Business
10-145-186 Financial Management-Small Business
10-145-187 Marketing Your Small Business
10-145-188 Entrepreneurial Service Management
10-145-189 Writing a Business Plan-Small Business

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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)

10-103-121 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.

10-145-185 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.

Business Management - Supply Chain Management Emphasis   Program Code 101023-S | 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.

Program Description
The Supply Chain Management 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 with an emphasis in Supply Chain Management 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 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
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
- 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
Business Management with an emphasis in Supply Chain Management is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-182-127	Purchasing	3
10-182-157	Logistics/Supply Chain Mgmt	3
10-801-136	English Composition 1	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
10-182-131	Negotiations	3
10-182-190	Transportation 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 Internship Practicum	2
10-182-120	Enterprise Resource Plan/Cont	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		17
TOTAL CREDITS		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.

10-182-157	Logistics/Supply Chain Mgmt	
10-182-127	Purchasing	
10-182-190	Transportation Mgmt	
10-182-131	Negotiations	
10-182-120	Enterprise Resource Plan/Cont	

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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)

10-103-121 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.

10-182-120 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.

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.

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.

10-182-190 TRANSPORTATION MANAGEMENT ...importance of transportation, transportation regulations/public policy, overview of transportation providers (motor carriers, railroads, air carriers, inter-modal and special carriers), costing/pricing transportation, transportation documentation, transportation management technology systems/processes.

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 Management 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 Management 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 with an emphasis in Hotel & Restaurant Management 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 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
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
• 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
Business Management with an emphasis in Hotel & Restaurant Management is a two-year, four semester program. Upon graduation, a student will have completed 66 credits.

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
10-804-123	Math w Business Apps	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		14

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-156	Operations & Service Mgmt	3
10-109-127	Hospitality Facilities Mgmt	3
10-801-136	English Composition 1	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER		
10-101-190	Accounting-QuickBooks	1
10-102-100	Bus and Info Tech Occup Prep	1
10-102-157	Operations Decision Making	3
10-109-126	Hospitality Finance	3
10-109-168	Restaurant Management	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 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		66

CURRICULUM NOTE
It is recommended courses be taken in the order listed.

10-109-114	Hotel Management	
10-109-127	Hospitality Facilities Management	
10-109-126	Hospitality Finance	
10-109-168	Restaurant Management	
10-104-125	Event Marketing	

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.

10-102-100 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.

10-102-156 OPERATIONS & SERVICE MANAGEMENT ...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 DECISION MAKING ...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. (Prerequisite: 10-102-156, Operations & Service Management)

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.

10-102-199 BUSINESS MANAGEMENT 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)

10-103-121 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).

10-109-114 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.

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) 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 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.

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

Curriculum

The Certified Medication Assistant Technical Diploma is a 100 hour program which includes 60 hours of theory/lab, held at NWTC Green Bay Campus, and 40 hours of clinical, held at Nursing Home where 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

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 Educational 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 life long 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, 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. 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.

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
program at NWTC is accredited by the
Technology Accreditation Commission
of ABET, http://www.abet.org.

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

Transfer Credit Policy
Any core credits considered for
transferability must have been completed
within the last seven years. In addition, a
minimum of 50 percent of the program
credits must be completed at NWTC.

Curriculum
The Civil Engineering Technology-Associate
Degree is a two-year plus one summer
semester program. Upon graduation, a
student will have completed 68 credits.

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
SEMESTER TOTAL		18

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

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

SUMMER SEMESTER		
10-607-191	Civil Engineering Internship	1
SEMESTER TOTAL		1
TOTAL CREDITS		68

SUGGESTED ELECTIVES
Land Law II, 10-607-155

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 a 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, linework,
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; Accepted into Civil Program)

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, public land
subdivision, land descriptions, horizontal
circular curve field layout/computation,
and computer applications. (Prerequisites:
10-607-102, Land Surveying/Computer
Appl; 10-804-195, College Algebra w Apps)

10-607-134 SURVEYING DRAFTING
...survey tie drafting, 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, astronomical
observations, 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)

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; 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 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

The Computer Support Specialist - IT Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 69 credits.

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
SEMESTER TOTAL		**18**

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	3
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		**69**

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.

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)

10-152-184 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   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; 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 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.

Curriculum

The Computer Support Technician - IT Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 35 credits.

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
SEMESTER TOTAL		18

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		35

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

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)

10-154-150 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. (Prerequisite: Accuplacer-Algebra=61 OR ACT-Math 21 OR 10-834-110, Elem Alg w/ Apps OR OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent)

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 TV 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

Course	Title	Credits
10-106-104	Realtime Reporting 1	5
10-106-144	Realtime Reporting Orientation	1
10-106-159	Legal Terminology	1
10-106-184	English for Realtime Reporters	1
10-106-804	Realtime Reporting 1 Lab	1
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**15**

SECOND SEMESTER

Course	Title	Credits
10-106-105	Realtime Reporting II	5
10-106-158	Realtime Reporting Technology	2
10-106-805	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**

THIRD SEMESTER

Course	Title	Credits
10-106-109	Literary I-Advanced	2
10-106-128	Jury Charge I-Advanced	2
10-106-156	Testimony I -Advanced	3
10-106-809	Literary I Lab-Advanced	1
10-106-828	Jury Charge I Lab-Advanced	1
10-106-859	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

Course	Title	Credits
10-106-111	Literary II-Advanced	2
10-106-129	Jury Charge II-Advanced	2
10-106-142	Judicial Reporting Procedures	2
10-106-143	Judicial Reporting Internship	1
10-106-157	Testimony II-Advanced	3
10-106-171	Medical Reporting/Terminology	2
10-106-811	Literary II Lab-Advanced	1
10-106-829	Jury Charge II Lab-Advanced	1
10-106-857	Testimony II Lab-Advanced	1
SEMESTER TOTAL		**15**

SUMMER SEMESTER

Course	Title	Credits
10-106-108	Realtime Reporting Speed Dev	2
SEMESTER TOTAL		**2**
TOTAL CREDITS		**65**

CURRICULUM NOTE
*Macroeconomics, 10-809-144, and Intro to College Math, 10-804-106, are available only at Lakeshore Tecnical College.

Courses Required Prior to Advanced Courses:
10-106-121   Jury Charge I-Beginner
10-106-826   Jury Charge I Lab-Beginner
10-106-122   Jury Charge II-Beginner
10-106-827   Jury Charge II Lab-Beginner
10-106-113   Literary I-Beginner
10-106-808   Literacy I Lab-Beginner
10-106-114   Literary II-Beginner
10-106-810   Literacy II Lab-Beginner
10-106-153   Testimony I-Beginner
10-106-858   Testimony I Lab-Beginner
10-106-154   Testimony II-Beginner
10-106-855   Testimony II Lab-Beginner

Optional Credits:
10-106-161   Realtime Rptg Technology Adv

COURSE DESCRIPTIONS

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

10-106-104 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 101061 Judicial Reporting or 321701 Broadcast Captioning or 321701 Judicial Reporting.

10-106-105 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. (Prerequisites: 10-106-104, Realtime Reporting 1 and 10-106-804, Realtime Reporting 1 Lab)

10-106-108 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: 10-106-105, Realtime Reporting 2)

10-106-109 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.)

10-106-111 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.)

10-106-128 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 is required.)

10-106-129 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.)

10-106-142 JUDICIAL 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.

10-106-143 JUDICIAL 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.

10-106-144 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. 101701 Broadcast Captioning program requirements met or 101061 Judicial Reporting program requirements met.

10-106-156 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.)

10-106-157 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.)

10-106-158 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.

10-106-159 LEGAL TERMINOLOGY ...provides the student with the ability to spell, pronounce, and define legal terms.

10-106-171 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: 10-106-156, Testimony 1-Advanced)

10-106-184 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.

10-106-804 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, phrases, words in singular and plural forms, prefixes and suffixes. (Concurrent registration in Realtime Reporting I is required.) CONDITION: 101701 Broadcast Captioning or 101061 Judicial Reporting or 321701 Broadcast Captioning or 321701 Judicial Reporting.

10-106-805 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.)

10-106-809 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: 10-106-109, Literary I-Advanced)

10-106-811 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.)

10-106-828 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: 10-106-128, Jury Charge I-Advanced)

10-106-829 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.)

10-106-857 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.)

10-106-859 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: 10-106-156, Testimony I-Advanced)

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 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 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 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

The Credit Business Management Associate Degree is an accelerated program. Upon graduation, a student will have completed 63 credits.

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
10-111-111	Credit-Consumer	4
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		17

SECOND SEMESTER		
10-102-150	Business Law & Ethics	3
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		15

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-102-158	Business-Principles	3
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		
10-114-181	Financial Statement Analysis	4
10-114-199	Credit-Internship Practicum	2
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity	3
	Elective	3
SEMESTER TOTAL		15
TOTAL CREDITS		63

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.

SUGGESTED ELECTIVES
Any course in the Financial Institutions 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.

10-102-100 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.

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)

10-114-101 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)

10-114-181 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-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)

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

Criminal Justice-Corrections   Program Code 105042 | 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 - 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 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 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

Curriculum
The Criminal Justice - Corrections
Associate Degree is a two-year, four-
semester program. Upon graduation, a
student will have completed 64 credits.

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
SEMESTER TOTAL		16

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		64

CURRICULUM NOTE
*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
Investigating High Tech Crime, 10-504-127
Treatment of Criminal Offenders, 10-504-119
Understanding Substance Abuse, 10-550-170

the criminal background check, a
student may be denied certifiability and
admission into or completion of the Jail
and Juvenile Detention Certifcate.
- 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 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 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.

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

Curriculum

The Criminal Justice - Law Enforcement Associate Degree is a two-year, four-semester program. Upon graduation a student will have completed 67 credits.

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
SEMESTER TOTAL		**16**

SECOND SEMESTER		
10-504-128	PS Job Interviews & Resume Writing	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		**67**

CURRICULUM 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. 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
Marine Officer Boat Patrol, 10-504-150
USCG Operator (OUPV), 10-504-150
Master of Vessel 100 Gross Ton, 10-504-152

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)

Criminal Justice - Law Enforcement 520 Academy

Program Code 305041 | 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 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 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

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. Veterans' 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.

Curriculum

Upon graduation, a student will have completed 17 credits and will be certifiable as a law enforcement officer in the state of Wisconsin.

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

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. 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 or waitlist status will
be granted. To learn more about these
assessments and program benchmark
scores, please contact a counselor 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)

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)

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; Corequisite:
31-508-309, Dental Lab Procedures)

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; Corequisite: 31-508-
308, Dental Chairside-Advanced)

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; Corequisite: 31-
508-311, Dental Assistant Clinical Advanced)

31-508-311 DENTAL ASSISTANT
CLINICAL - ADV ...Dental 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; 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 the Central
Regional Dental Testing 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. 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 or waitlist status will
be granted. To learn more about these
assessments and program benchmark
scores, please contact a counselor at
(920) 498-5444 or (888) 385-6982.
• Attend mandatory spring
Program Orientation.

• Complete a dental examination within
three months before entering the program.
• 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.

Curriculum
The Dental Hygienist Associate Degree
is a two-year, two-summer, six-semester
program. Upon graduation, a student
will have completed 70 credits.

SUMMER SEMESTER	CREDITS
*10-508-101 Dental Health Safety	1
++10-806-177 Gen Anatomy & Physiology	4
++10-806-186 Intro to Biochemistry	4
SEMESTER TOTAL	9

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	4
*10-508-106 Dental Hygiene Process 2	2
*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	70

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.

SUGGESTED ELECTIVES
DH-Dental Career Transition, 10-508-118
DH-Dental Hygiene Board Review, 10-508-119

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, Dental 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; 10-806-197, 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)

10-508-113 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)

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)

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)

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

• Implement promotional strategies.
• Create and design for print/web.
• Assemble and manage a design portfolio.
• Perform electronic prepress operations.
• Operate printing equipment.
• Manage color separations and
  digital print output.
• Perform digital publishing operations.
• Implement typography strategies.
• Design web pages.
• Complete 144 hours of internship
  work experience in the field.

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 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:

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.

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

Curriculum

The Design and Graphic Technology
Associate Degree is a two-year, four-
semester program. Upon graduation, a
student will have completed 70 credits.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-111-111	Graphic Design 1	3
10-111-120	Macintosh Publishing	3
10-111-161	Macintosh Illustration	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		**16**

SECOND SEMESTER		
10-111-110	Macintosh Image Editing-Adv	3
10-111-125	Graphic Reproduction Tech	3
10-111-165	Typography	3
10-152-185	Website Coding	3
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-104-107	Marketing Comm-Integrated	3
10-111-121	Graphic Design 2	3
10-204-110	Publishing Technologies	3
10-204-124	Variable Data Publishing	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		**19**

FOURTH SEMESTER		
10-111-143	Graphic Reproduction-Adv	3
10-111-199	Des/Graphic Intern Practicum	2
10-204-111	Digital Publishing Operations	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

• Macintosh-Intro class is a corequisite to
  any first semester course in the Design
  and Graphic Technology program.
• It is also recommended that learners
  take the Design and Graphic Technology
  Internship Practicum course
  (10-111-199) in their last semester.

• 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.
(Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO
...explore the Macintosh Operating System
and applications including iPhoto, iTunes,
iMovie, GarageBand, FontBook, Sherlock,
iCal, AddressBook and Dashboard.
Learn to navigate the Mac Operating
System and manage files and folders.

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: 10-111-103, Macintosh-Intro;
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. (Corequisites:
10-111-103, Macintosh-Intro; 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. (Corequisite:
10-111-103, Macintosh-Intro)

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: 10-111-103, Macintosh-
Intro; 10-111-111, Graphic Design 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:
10-111-103, Macintosh-Intro)

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-
111-103, Macintosh-Intro; 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.
(Corequisite: 10-111-103, Macintosh-Intro)

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:
10-111-103, Macintosh-Intro)

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)

10-152-185 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.

10-204-110 PUBLISHING
TECHNOLOGIES ...introduction to
printing process, electronic publishing,
prepress operations, press operations,
postpress operations, job logs, professional
portfolios, and job seeking skills.
(Corequisite:10-111-103, Macintosh-Intro)

10-204-111 DIGITAL PUBLISHING
OPERATIONS ...press equipment,
processors, inks, print quality, job
tickets, standard operating procedures,
densitometers, printing problems, and
trapping situations. (Prerequisite: 10-
111-103, Macintosh-Intro; 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.

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)

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.
• High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
• As a requirement for program application, 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. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982. .
• Two semesters in high school, or one semester in college of 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:
• Three references from professional or academic experiences submitted on NWTC forms.
• An essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay must include 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 selection committee. Candidates are ranked in the following categories: Assessment, Math/ Science, Essays, References. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have pre-program status with an opportunity to be considered with the following year's applicants.

Curriculum
The Diagnostic Medical Sonography Associate Degree is a two-year, two-summer, six-semester program. Upon graduation a student will have completed 70 credits.

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

THIRD SEMESTER

*10-526-211	Superficial Sonography	2
*10-526-212	OB/GYN Sonography 2	3
*10-526-213	DMS Clinical Experience 2	2
10-801-136	English Composition 1	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		13

FOURTH SEMESTER

*10-526-215	DMS Clinical Experience 3	2
*10-526-216	DMS Clinical Experience 4	3
*10-526-218	DMS Clinical Experience 5	3
*10-526-224	Vascular Imaging 2	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		14

SUMMER SEMESTER — CREDITS

10-804-107	College Mathematics	3
10-806-143	College Physics 1	3
SEMESTER TOTAL		6

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
TOTAL CREDITS		70

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.

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.

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 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.

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

Curriculum
The Diesel and Heavy Equipment Technician Technical Diploma is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 65 credits.

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
32-442-352	Welding-Metal Working Proc	2
SEMESTER TOTAL		17

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		65

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.

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)

10-412-138 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: 10-412-109, 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 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.

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

Curriculum

The Diesel Equipment Technology Associate Degree is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 68 credits.

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
SEMESTER TOTAL		15

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		68

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.

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: 10-412-109, 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.

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 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

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.

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

FIRST SEMESTER

Code	Course	CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
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
SEMESTER TOTAL		16

SECOND SEMESTER

Code	Course	CREDITS
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

Code	Course	CREDITS
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

Code	Course	CREDITS
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
Macintosh-Intro is a corequisite to any first semester course in the Digital Media Technology degree. It is also suggested that learners, regardless of age or professional experience, should take the Macintosh-Intro class if they are not familiar with the Macintosh OSX version operating system. This course is designed to help familiarize the learner with the Macintosh computer environment used in the Digital Media Technology degree.

SUGGESTED ELECTIVES
Any course beginning with catalog number 10-206 or 10-203

• 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. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

10-206-100 DIGITAL AUDIO OVERVIEW ...concept of analog to audio conversion, processing sound in digital domain, MIDI music production, CD audio production, video soundtracks, enhanced podcast audio, basic of time code and format conversion.

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. (Prerequisite: 10-206-107, Internet Broadcasting)

10-206-120 MUSIC PRODUCTION WITH LOGIC STUDIO ...covers the basic concepts of melody, harmony, rhythm and form as well as orchestration, and the process of building an arrangement, one instrument at a time, using Logic Studio. (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; 10-111-103, Macintosh-Intro)

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. (Prerequisite:10-206-174, Motion Graphics for Video)

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/scheduling, 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 Braodcasting)

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. (Prerequisite: 10-206-154, Macintosh Video Editing)

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 for a professional career
in early childhood education, including
preschool, childcare, and exceptional
education settings from birth to age
eight. It is designed to provide students
with the skills and knowledge necessary
in the field of child development.

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. 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 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:

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 and
  9030715, Early Childhood Professional
  Development 2 Certificate (The combined
  12 credits from these two certificates
  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

Curriculum

The Early Childhood Education Associate
Degree is a two-year program. Upon
graduation, a student will have completed
69 credits. Courses are offered online,
accelerated, and blended, and may be
taken in any order as long as prerequisites
are met. Below is a suggested timeline.

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
SEMESTER TOTAL		18

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 St	3
10-809-188	Developmental Psychology	3
10-809-199	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 Rel	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		
10-307-198	ECE: Admin an ECE Program	3
**10-307-199	ECE: Practicum 4	3
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		15
TOTAL CREDITS		69

CURRICULUM NOTE
*Blended online class requires two/three
Saturday visits to the Green Bay Campus

**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.

***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

behavior. Students accepted into this
program must complete a background
information 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 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. Students are required
to complete a caregiver background
check through www.certifiedbackground.
com. 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.

**10-307-148 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)

**10-307-198 ECE: ADMINISTERING
EARLY CHILDHOOD EDUCATION
PROGRAM** ...administration of an early
childhood program. Diversity and anti-
bias perspectives; ECE facilities, program,
finances, aspects of personnel supervision,
laws and regulations, advocacy.

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)

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.

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, 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.

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/electronics 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

The Electrical Engineering Technology Associate Degree is a two-year, four-semester program consisting of two tracks. Students take one of the two. Upon graduation, a student will have completed 70 credits.

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
10-809-195 Economics	3
TOTAL CREDITS	**16**

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**
TOTAL PROGRAM CREDITS	**70**

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 course descriptions 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. (Prerequisite: 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 3: 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 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 conversion, 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. (Prerequisite: 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 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. (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)

10-660-111 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 Thevenins and Nortons 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)

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 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 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

The Electrical Power Distribution
Technical Diploma is a one-year, three-
semester program. This program starts
in June. Upon graduation, a student
will have completed 32 credits.

FIRST SEMESTER		CREDITS
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		8

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		32

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)

Electricity

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.

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 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.

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.

Curriculum

The Electricity Technical Diploma
is a two-semester program broken
down into four-quarters of nine-week
courses. Upon graduation, a student
will have completed 28 credits.

FIRST SEMESTER		CREDITS
31-413-314	DC Circuits	2
31-413-316	Residential Elec Code 1	1
31-413-317	Fundamentals of Electricity	2
31-413-319	Residential Wiring 1	3
31-413-326	Residential Elec Code 2	1
31-413-329	Residential Wiring 2	3
31-449-301	Electrical Safety	1
31-804-312	Math-Algebra/Trades	1
SEMESTER TOTAL		14

SECOND SEMESTER		
31-413-303	Industrial Controls	2
31-413-304	Electric Motor Control	2
31-413-327	Commercial Wiring Techniques	2
31-413-328	Motors/Transformers	2
31-413-334	AC Circuits	2
31-413-345	Industrial Code	1
31-413-346	Commercial Elec Code	1
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		14
TOTAL CREDITS		28

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

COURSE DESCRIPTIONS

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

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)

10-413-316 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.

10-413-317 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-
413-316, Residential Elec Code 1,
31-449-301, Electrical Safety)

10-413-326 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-
413-316, Residential Electrical Code 1)

10-413-327 COMMERCIAL WIRING
TECHNIQUES ...raceways and fittings,
conduit bending, wire pulling methods,
fastening systems, lighting and low-
voltage wiring. (Corequisite: 10-413-
346, 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-
413-326, Residential Electrical Code
2, 31-449-301, Electrical Safety)

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)

10-413-345 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:
10-413-316, Residential Elec Code 1; 10-413-
326, Residential Elec Code 2; Corequisite:
10-413-346, Commercial Elec Code)

10-413-346 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:
10-413-326, Residential Electrical Code 2)

31-449-301 ELECTRICAL SAFETY
...standard first aid, CPR and OSHA 10-hour
course as it relates to the electrical field.

Electro-Mechanical Technology Program Code 106201 | 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

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, 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.

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

The Electro-Mechanical Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 64 credits.

FIRST SEMESTER
		CREDITS
10-420-171	Machine Tool Processes 1	1
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
SEMESTER TOTAL		**16**

SECOND SEMESTER
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		**15**

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		**64**

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. (Prerequisite: 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. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: 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. (Prerequisite: 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. (Prerequisite: 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, 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.

- 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:

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.

Curriculum

The Electronics (with optional Biomedical specialty) Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

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
TOTAL CREDITS	14

ELECTRONICS TECHNOLOGY FIRST SEMESTER	
10-620-140 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
10-801-197 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	68

CURRICULUM NOTE
*In order to successfully complete the Biomedical track, no final grade lower than a "C" is acceptable in any of the courses marked with an asterisk.

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. (Prerequisite: 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 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. (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)

10-660-111 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 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.

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 Emergency Medical Technician Technical Diploma will have the potential for employment as an Emergency Medical Technician. Ambulance services in Wisconsin are volunteer, private, fire based or hospital based.

Note

- 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.
- Completion of 30-531-302, Medical First Responder, prior to program entry is highly recommended.

Curriculum

The Emergency Medical Technician program is a one-semester program. Upon graduation, a student will have successfully completed five credits and earned a Technical Diploma. This course is 196 hours in length.

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.

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.

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 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.

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, HVAC 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 recommend 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 more uniformity.

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

Curriculum

The Energy Management Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

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	Interim Algebra w Apps	4
10-806-143	College Physics 1	3
SEMESTER TOTAL		16

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		67

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, 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)

10-660-109 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)

10-664-102 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. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: 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 enviornmental 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 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.

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.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Environmental Engineer
- Environmental Health and Safety Manager

Curriculum
The Environmental Engineering-Waste & Water Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER	CREDITS
10-506-146 Intro to Environmental Science	3
10-506-147 Environmental Biology	4
10-620-100 Fluids 1: Basic Pneumatics	1
10-620-101 Fluids 2: Basic Hydraulics	1
10-804-118 Interm Algebra w Apps	4
10-806-134 General Chemistry	4
SEMESTER TOTAL	17

SECOND SEMESTER	
10-403-100 Blueprint Reading Intro	1
10-506-148 Environmental Chem Analysis	4
10-506-149 Intro to Environ Compliance	3
10-620-161 Power Electricity 1: Motors	1
10-620-162 Power Electricity 2: Motors	1
10-620-165 Fluids 3: Inter Hydraulics	1
10-801-136 English Composition 1	3
10-809-195 Economics	3
SEMESTER TOTAL	17

THIRD SEMESTER	
10-506-150 Environmental Microbiology	3
10-506-151 Wastewater Treatment & Analysis	4
10-506-152 Ind. Safety & Emerg. Response	3
10-620-121 Mechanics 1: Basic	1
10-620-122 Mechanics 2: Intermediate	1
10-620-123 Mechanics 3: Systems	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	18

FOURTH SEMESTER	
10-506-153 Solid and Hazardous Waste	4
10-506-154 Air Pollution Control Systems	3
10-506-155 Water Treatment & Analysis	4
10-809-172 Intro to Diversity Studies	3
10-809-198 Intro to Psychology	3
SEMESTER TOTAL	18
TOTAL CREDITS	68

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 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.

10-506-156 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.

10-506-154 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)

10-620-100 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)

10-620-161 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)

10-664-100 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 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 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 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

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

The Financial Institutions Management Associate Degree is an accelerated program. Upon graduation, a student will have completed 67 credits.

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
SEMESTER TOTAL		17

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		67

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.

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.

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)

10-114-180 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.

Fire Protection Technician   Program Code 105032 | Associate Degree

A Fox Valley 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 Fox Valley Technical College.

Program Description
This program prepares you for a career in fire prevention and protection. You will learn to apply proper principles in solving fire-related problems facing America in the 21st Century. Through realistic classroom simulation and hands-on experience, you will master the knowledge and techniques to save lives and property.

The Fire Protection Internship provides an opportunity for you as a qualified student to work in a fire department for a semester or school year and function as a regular firefighter. You are also given practical training at the Fox Valley Technical College Regional Fire Training Center. This practical work experience and training together with classroom instruction provides you with a comprehensive understanding of fire prevention and firefighting principles.

You will have the opportunity to complete certification training for the State of Wisconsin in Firefighter 1 and II, Fire Inspector I, and Driver/Operator-Pumper. You will receive training in Hazardous materials, rope rescue, confined space rescue, and trench rescue to the Technician Level. You will also receive EMT-Basic certification training while completing your associate degree.

The Fire Protection Technician program is designed to permit a new student to enter at the start of each semester as openings exist.

Program Outcomes
- 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, inspections, and investigations.
- Apply management skills to emergency incidents.
- Meet professional fire and emergency medical credentialing standards.
- Apply critical thinking skills to both emergency and non-emergency situations.
- Communicate clearly and effectively both verbally and through written documentation with clients, coworkers, other agencies, and supervisors.

Requirements for Program Entry
- An Accuplacer Reading Score of 54 or greater, or completion of equivalent Program Prep Course is required prior to enrolling in Technical Studies Fire Protection classes.
- Accuplacer Sentence Skills Score 83, or completion of Program Prep Course.
- Accuplacer Arithmetic Score of 65 or Program Prep Math is required prior to College Mathematics class.

- This program requires successful completion of a Criminal Background Check and a Caregiver Background Check. This means that you will have to verify that you have NO record with the Department of Justice and the Department of Health and Family Services that would prohibit you from working in a career-related profession. You will be asked to complete the check prior to your participation in a clinical or an internship placement.
- High School graduation or equivalent; a copy of your High School Transcript
- Application for admission and $30.00 fee; Admissions assessment
- Newly admitted program students are required to attend/complete a New Student Orientation (NSO) before registering for their first semester of courses. Attendance at the 4 hour, on campus session in Appleton is highly recommended. (There is also an online version available for individuals who live a long distance from campus, but the information is limited, and does not include "how to register for classes.")
- When registering for the 1st semester of core Fire Protection courses (Term 23 on the Program Plan) you must register for all 3 core (503) courses at the same time. This includes Hazardous Materials (10-503-152), Firefighting Principles (10-503-142), and Principles of Emergency Services (10-503-139). Students who have completed state certification for Firefighter 1 are eligible for advanced standing credit for the Firefighting Principles course. All paperwork and fees must be processed in order to be eligible to register for Hazardous Materials and Principles of Emergency Services.
- Hepatitis B vaccination is strongly recommended
- Respiratory Questionnaire
- Boots, gloves, and hood for Firefighting Principles

Employment Potential
As a fire protection technician, you protect life and property through fire prevention efforts and, if necessary, by proper firefighting principles and techniques. Upon graduation from the Fire Protection Technician program, you are well trained in the progressive, proactive philosophy of the modern fire service which emphasizes fire prevention and public education, as well as the traditional firefighting and emergency medical service components.

There is a 2 plus 2 agreement in place between UW-Oshkosh and Fox Valley Technical College, which will allow a student to get a bachelor's degree in Fire and Emergency Response Management.

Note
Helpful High School Courses
Four years of English; speech; two years of math (Algebra I); chemistry; computer keyboard skills; and physical education are beneficial.

Note
Class size is limited to 36 new students each semester.

GENERAL STUDIES		CREDITS
10-801-136	English Composition 1	3
10-801-198	Speech	3
10-804-107	College Mathematics	3
10-806-134	General Chemistry	4
10-809-195	Economics	3
10-809-196	Intro to Sociology	3
10-809-198	Intro to Psychology	3
TOTAL CREDITS		**22**

TECHNICAL STUDIES		
10-107-150	Microcomputer Applications	2
10-503-101	Technical Rescue	4
10-503-130	Fire Protection Internship	2
10-503-139	Principles of Emergency Svcs	4
10-503-142	Fire Fighting Principles	4
10-503-143	Building Construction	3
10-503-147	Fire Protection Systems	4
10-503-151	Fire Prevention	4
10-503-152	Hazardous Materials	4
10-503-155	Fire Protection Hydraulics	4
10-503-156	Strategies, Tactics, Inc Mgmt	4
10-503-157	Fire Investigation	3
10-531-102	Emergency Medical Technician	5
TOTAL CREDITS		**46**

ELECTIVES		
Suggested 1-Credit Electives:		
10-140-174	Spanish 1 Fire Protection	
10-503-131	Fire Protection Internship-Extended	
10-503-132	Fire Protection Independent Study 1	
10-503-133	Fire Protection Independent Study 2	
10-503-135	Firefighter Fitness	
10-503-134	Health and Wellness for Firefighters	
10-890-100	College Success 1	
10-890-103	Employability Strategies	
10-806-177	General Anatomy & Physiology	
10-806-179	Advanced Anatomy & Physiology	
10-806-197	Microbiology	
10-809-188	Developmental Psychology	

Classes required for Paramedic can be used as electives for the Fire Protection program

TOTAL CREDITS	1
TOTAL PROGRAM CREDITS	**69**

Note
Information: NWTC Admissions, (920) 498-5444 or (888) 385-6982, or www.nwtc.edu

Internship
Students are required to complete an internship at a local fire department. The internship will consist of 24-hour shifts which rotate to coincide with the fire department's shift schedule.

Note
Students will be required to provide their own boots, hood, and gloves during the Firefighting Principles class.

Note
The required course work is rigorous. For every credit (hour in class/week) students should plan to spend two hours outside of class time in independent study. Class schedules vary each semester so plan to have a flexible employment schedule while enrolled in the program

Note
*Written Communication, 10-801-195, may be taken only at FVTC.

COURSE DESCRIPTIONS

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

10-107-150 MICROCOMPUTER APPLICATIONS ...designed for students with little or no hands-on computer experience. Presents the basic functions of the Windows operating system and how to use the word processing, spreadsheet and presentation functions of Microsoft Office software. Students will integrate various functions of several Microsoft packages.

10-503-101 TECHNICAL RESCUE ...exposes the student to labor-intensive requirements in team-based technical rescue. Students will be trained in rope rescue, confined space rescue and trench rescue to the technician level. (Pre-Corequisites: Principles of Emergency Services (10-503-139 or 10-503-100); Fire Fighting Principles (10-503-142 or 10-503-102) or Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-130 FIRE PROTECTION INTERNSHIP ...provides an opportunity for students to perform the duties of a municipal firefighter while serving the typical 24-hour shift, excluding FVTC class periods, at one of several fire departments. Fire department officers evaluate student performance. Department consent required

10-503-139 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. Prerequisite: Admission to Fire Protection Technician program; Corequisites: Fire Fighting Principles (10-503-142 or 10-503-102); Hazardous Materials (10-503-152 or 10-503-108) or Firefighter I State Certification and advanced standing in Firefighting Principles

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 certification. Prerequisite: Admission to the Fire Protection Technician program; Corequisites: Principles of Emergency Services (10-503-139 or 10-503-100); Hazardous Materials (10-503-152 or 10-503-108)

10-503-143 BUILDING CONSTRUCTION ...provides the components of building construction that relate to fire and life safety. (Pre/Corequisite: Principles of Emergency Services 10-503-139 or 10-503-100)

10-503-147 FIRE PROTECTION SYSTEMS ...provides information relating to the features of design and operation of fire detection and suppression systems. (Pre/Corequisite: Principles of Emergency Services 10-503-139 or 10-503-100)

10-503-151 FIRE PREVENTION ...provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use of fire codes, and identification and correction of fire hazards. Meets all requirements for Fire Inspector 1 certification with the State of Wisconsin. (Pre/Corequisites: Principles of Emergency Services 10-503-139 or 10-503-100; Fire Fighting Principles,10-503-142 or 10-503-102 or Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-152 HAZARDOUS MATERIALS ...examines characteristics relating to hazardous materials including problems of recognition and mitigation. Prepares students for Hazardous Materials Technician Level. Prerequisite: Admission to the Fire Protection Technician program; Corequisites: Principles of Emergency Services (10-503-139 or 10-503-100); Fire Fighting Principles (10-503-142 or 10-503-102)

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. (Pre/Corequisites: Principles of Emergency Services 10-503-139 or 10-503-100; Fire Fighting Principles (10-503-142 or 10-503-102) or Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-156 STRATEGIES, TACTICS, AND INCIDENT MANAGEMENT ...provides an in-depth analysis of the principles of emergency response through utilization of an incident management system. Prepares students to pursue current national ICS training requirements. (Pre/Corequisites: Principles of Emergency Services 10-503-139 or 10-503-100; Fire Fighting Principles (10-503-142 or 10-503-102) or Firefighter I State Certification and advanced standing in Firefighting Principles)

10-503-157 FIRE INVESTIGATION ...provides learners with the fundamentals and technical knowledge needed for proper fire scene investigations. (Pre/Corequisite: Principles of Emergency Services 10-503-139 or 10-503-100) or enrollment in an investigation-related ITS degree program, 10-825-1)

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 in the EMT program; Corequisite: 47-531-446, Healthcare Provider CPR)

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.

Curriculum

The Gas Utility Construction and Service
Technical Diploma is a nine-month,
three-semester program. This program
starts in June. Upon graduation, a
student will have completed 32 credits.

FIRST SEMESTER		CREDITS
10-804-101	Math 1-Trades	2
31-442-315	Welding-Gas Service 1	2
31-469-310	Gas Utility Field Trng 1	4
SEMESTER TOTAL		**8**

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
31-469-330	Gas Utility Field Trng 3	5
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		**17**

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**

With additional education and/or work
experience, graduates may find other
opportunities for employment.
• 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: 10-804-101, Math 1-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)

31-469-310 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-
469-310, Gas Utility Field Training 1)

31-469-330 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-
330, Gas Utility Field Training 3)

General Studies Transfer

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 not eligible for financial aid.

Program Description

The General Studies Transfer program includes a 32-33 credit core of courses designed to meet specific general education requirements at UW-Green Bay or UW-Oshkosh. Additional admission requirements and fees may apply.

Program Outcomes

Course completion will allow students to qualify for sophomore status at UW-Green Bay or UW-Oshkosh. Completers who have a 2.5 overall Grade Point Average may submit an application to either university.

Requirements for Program Entry

- Students who are interested in applying to the UW-Green Bay General Studies Transfer certificate (90-890-2) or UW-Oshkosh General Studies Transfer certificate (90-890-3) must meet with an NWTC counselor or advisor to complete the necessary application paperwork and review the requirements for either certificate. To schedule an appointment, please contact Enrollment Services at (920) 498-5444.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/gettingstarted.)
- Please note that enrollment in some courses requires an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores. See course descriptions for detail; equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.

Note

- All requirements and fees for enrollment at UW-Green Bay or UW-Oshkosh will apply and are subject to change.
- For more information on UW-Green Bay, go to UW-Green Bay Admissions Office Web site: www.uwgb.edu/admissions
- For more information on UW-Oshkosh, go to UW-Oshkosh Admissions Office Web site: http://admissions.uwosh.edu

Curriculum

The General Studies Transfer program is a 32-33 credit program. Please follow the curriculum list for your intended transfer school.

GENERAL STUDIES TRANSFER TO UW-GREEN BAY

10-480-101	Energy-Intro Renew & Sustain	4
10-801-136	English Composition 1	3
10-804-118	Interm Algebra w Apps	4
10-806-112	Principles of Sustainability	3
10-806-134	General Chemistry	4
10-806-154	General Physics 1	4
OR		
OR		
10-806-134	General Chemistry	4
OR		
OR		
10-806-112	Principles of Sustainability	3
10-806-189	Basic Anatomy	3
10-809-122	Intro to Amer Government	3
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
10-809-188	Developmental Psychology	3
OR		
OR		
10-809-196	Intro to Sociology	3
OR		
OR		
10-809-198	Intro to Psychology	3
OR		
OR		
10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
10-809-197	Contemporary Amer Society	3
10-809-198	Intro to Psychology	3
TOTAL CREDITS		**46**

GENERAL STUDIES TRANSFER UW-OSHKOSH

10-801-195	Written Communication	3
10-801-196	Oral/Interpersonal Comm	3
10-801-197	Technical Reporting	3
10-801-198	Speech	3
OR		
OR		
10-801-196	Oral/Interpersonal Comm	3
10-804-118	Interm Algebra w Apps	4
10-806-134	General Chemistry	4
10-806-154	General Physics 1	4
OR		
OR		
10-806-134	General Chemistry	4
10-809-166	Intro to Ethics: Theory & App	3
10-809-172	Intro to Diversity Studies	3
TOTAL CREDITS		**30**

AREA ONE:

10-809-159	Abnormal Psychology	3
OR		
OR		
10-809-188	Developmental Psychology	3
OR		
OR		
10-809-198	Intro to Psychology	3
OR		
OR		
10-809-199	Psychology Of Human Relations	3
10-809-188	Developmental Psychology	3
10-809-198	Intro to Psychology	3
10-809-199	Psychology Of Human Relations	3
TOTAL CREDITS		**12**

AREA TWO:

10-809-195	Economics	3
TOTAL CREDITS		**3**

AREA THREE:

10-809-122	Intro to Amer Government	3
10-809-196	Intro to Sociology	3
OR		
OR		
10-809-197	Contemporary Amer Society	3
OR		
OR		
10-809-122	Intro to Amer Government	3
10-809-197	Contemporary Amer Society	3
TOTAL CREDITS		**9**

Gerontology Program Code 105441 | Associate Degree

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) 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, 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.
• 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.

FIRST SEMESTER		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
SEMESTER TOTAL		16

SECOND SEMESTER		
*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		
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		
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		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.

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.

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. (Corequisite: 10-544-201, Intro to Gerontology)

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. (Prerequisite: 10-544-201, Intro to Gerontology)

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 acutal 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).

Global Business   Program Code 101381 | Associate Degree

A Waukesha County Technical College program 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 lettes 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.
- Demonstrae 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

About Shared Programs

- Courses will be offered online (NET) from WCTC.
- Contact WCTC for all benchmark scores.

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	Global Supply Chain Sourcing	3
10-138-181	Global Trade Finance	3
10-801-197	Technical Reporting	3
10-809-115	Global Cultural Awareness 1	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
10-138-190	Global Cultural Experience	1
OR		
10-140-120	Study Abroad	1
10-138-194	Import Compliance	2
10-138-195	Export Compliance	2
10-801-196	Oral/Interpersonal Comm	3
10-809-116	Global Cultural Awareness 2	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 benchmark scores 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.

10-138-182 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.

10-138-190 GLOBAL CULTURAL EXPERIENCE ...refer to www.wctc. edu for this course description.

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.

10-140-199 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,

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
SEMESTER TOTAL		16

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
*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		65

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.

- 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).

78; Sentence Skills, 90. 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 or waitlist 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.

- 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

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, dental insurance, Workers' Compensation, disability insurance, dental 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)

10-501-101 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. 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 or waitlist 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.
• 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.

Curriculum

The Health Information Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

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
SEMESTER TOTAL	14

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	3
*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	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 following courses are offered only in the Fall semester and in person:
10-530-177, Healthcare Stats & Research
10-530-160, Health Informatics
10-530-196, HIT-Professional Practice 1

• The following courses are offered only in the Spring semester and in person:
10-530-161, Health Quality Management
10-530-198, HIT-Professional Practice 2

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; 10-103-111, Micro: Windows Intro; 10-103-121, Micro: Word 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)

10-530-176 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; accepted in the Health Information Technology Program, Health Care Business Services program or Medical Coding Specialist Certificate)

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; 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)

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 prepares students to work with the control of air in respect to its heating, cooling, humidity, and cleanliness. Students will be able to install, service, troubleshoot, and repair HVAC/R systems.

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, 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.

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 customer's 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

Heating, Ventilation, Air Conditioning, and Refrigeration Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

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
SEMESTER TOTAL	16

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	68

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)

10-601-111 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; Corequisite: 10-601-133 HVAC/R Refrigeration Fundamentals)

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-requisites 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; 10-601-137, HVAC Mech Svc Appl; 10-601-138, HVAC Sheet Metal for HVAC Techs)

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, sheetmetal 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 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

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.

Curriculum

The Hotel and Restaurant Management Associate Degree is a two-year program. Upon graduation, students will have completed 66 credits.

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
10-109-114	Hotel Management	3
10-801-136	English Composition 1	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		15

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		
10-102-100	Bus and Info Tech Occup Prep	1
10-102-160	Global Business Mgmt	3
10-104-110	Marketing Principles	3
10-104-119	Social Media Marketing	3
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 Intern Practicum	2
10-809-172	Intro to Diversity Studies	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		17
TOTAL CREDITS		66

• General Manager
• Marketing Director
• Restaurant Manager
• Catering Manager

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.

10-102-100 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.

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.

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.

10-109-114 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 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)

10-145-185 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.

Human Resources   Program Code 101161 | Associate Degree

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 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.
- 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

FIRST SEMESTER		CREDITS
10-101-106	Accounting-for Non-Accountants	3
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
SEMESTER TOTAL		15

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
10-102-100	Bus and Info Tech Occup Prep	1
10-116-111	Employee Recruitment/Retention	3
10-116-112	Compensation/Benefits Admin	3
10-809-195	Economics	3
10-196-136	Safety-Workplace	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 Internship Practicum	2
10-196-169	Diversity in the Workplace	3
SEMESTER TOTAL		15
TOTAL CREDITS		64

CURRICULUM NOTE
- 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.

10-102-100 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.

10-116-110 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.

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 RES 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. (Corequisite: 10-102-100, Bus and Info Tech Occup Prep)

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) 682-7144.

This program is eligible for financial aid only through Northcentral Technical College.

Program Description

The Human Services Associate program is designed to offer opportunities to pursue special interests, such as working with youth, the elderly, corrections clients or providing services to the disabled.

Program Outcomes

The degree prepares students for entry-level positions in a variety of human service agencies. Students will acquire skills needed to work with individuals, groups, and communities and learn to work with people of diverse racial, ethnic and cultural backgrounds.

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 ACT or Accuplacer, you will need to complete Remediation with NTC's 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 occupations include: Social Services, Community Corrections, Youth Services, Hospitals, Nursing Facilities, Group Homes, Alcohol, Tobacco, and Other Drug Abuse Agencies, Crisis Intervention Centers, Programs for the Aging.

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.

- Admission and Notification Priority: Applicants who meet the admission requirements will be admitted in order of completed application dates. Accepted

Curriculum

The Human Services Associate-Associate Degree 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
*10-809-174	Social Problems	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.

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...This course is an overview of topics related to human sexuality. Using a biopsychosocial perspective, students will evaluate human sexual behavior as an interaction of physiological, psychological and sociocultural processes. Due to the mature subject matter discussed and the candid nature of this course, it is limited to the mature students who are at least 18 years of age.

10-520-106 HUMAN SEXUALITY ...Human Sexuality is an overview of topics related to human sexuality . Using a biopsychosocial perspective, students will evaluate human sexual behavior as an interaction of physiological, psychological and sociocultural processes. Students will review recent scientific advances in areas such as genetics, endocrinology, linguistics, information processing, and social psychology as they relate to our current understanding of human sexual practices. Due to the mature subject matter discussed and the candid nature of this course, it is limited to the mature student who is at least 18 years of age. There is no challenge test for this course.

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 in human services professions and/or further study in the field. Prerequisite: 10-809-188 DEVELOPMENT 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 helper's role in providing those services; as well as the helper's 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: 10-520-115 INTRO TO COUNSELING, 10-809-159 ABNORMAL PSYCHOLOGY, and acceptance in Human Services program.

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)

10-544-201 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 symtomology 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, 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, 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.

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. 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 the entrepreneur, and has created certificate offerings to support the creation and growth of small business.These certificates may be paired with general studies courses to 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 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB 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 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

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.

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).

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

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 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better 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

Industrial Mechanic prepares students to evaluate machine performance, identify trouble areas, and repair systems.

Program Outcomes

- 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.

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 industrial education.
- 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: 34; 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 (920) 498-5444 or (888) 385-6982.

Employment Potential

Industrial or Maintenance Mechanic: installs, repairs, and maintains the operating condition of industrial production and processing machinery.

Machine Adjuster: adjusts and maintains machinery for optimum manufacturing production.

Machine Assembler: assembles machines, equipment, and their subassemblies following blueprints and assembly procedures.

Machinery Erector: erects and tests machinery and heavy equipment, replaces defective parts of a machine, adjusts clearances and alignment of moving parts, and dismantles machinery and equipment for shipment to the installation site.

Machinery Repairer: inspects, maintains, repairs, and adjusts machinery and equipment in order to ensure its proper operation in the various industries.

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

- Lead Mechanic
- Maintenance Supervisor
- Master Mechanic
- Millwright

Curriculum

The Industrial Mechanic Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 31 credits.

FIRST SEMESTER		CREDITS
10-620-105	Rigging Systems 1	1
10-804-101	Math 1-Trades	2
31-420-314	Machine Shop-Basic	4
31-421-355	Blueprint Rdg/Sket-Indus	2
31-462-301	Mechanic 1-Industrial	4
31-462-302	Mechanic 2-Industrial	4
SEMESTER TOTAL		17

SECOND SEMESTER		
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
31-442-365	Welding-Industrial	3
31-462-303	Mechanic 3-Industrial	4
31-462-304	Mechanic 4-Industrial	4
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		14
TOTAL CREDITS		31

Note
Students may expand their employment opportunities and earn an additional credential, the Industrial Maintenance Certificate (Cert 904621), by taking the courses listed below in combination with the Industrial Mechanic Technical Diploma. Courses are offered at the NWTC Manufacturing Technology Center in an instructor-assisted, individualized skills training format. Courses may be taken before, during and/or after completion of the Industrial Mechanic Technical Diploma. For more information, please call the Trades & Engineering Technologies Department, (920) 498-5461.

10-664-100 Automation 1: Control Logic
10-664-101 Automation 2: Motor Control
10-664-102 Automation 3: PLC
10-664-103 Automation 4: PLC
10-664-104 Automation 5: PLC
10-664-105 Automation 6: PLC
10-620-140 Machine Wiring and Safety
10-620-161 Power Electricity 1: Motors
10-605-158 Power Electronics 2: Drives
10-620-100 Fluids 1: Basic Pneumatics
10-620-101 Fluids 2: Basic Hydraulics
10-620-105 Rigging Systems 1
10-620-121 Mechanics 1: Basic
10-620-122 Mechanics 2: Intermediate
Total Certificate Credits: 14

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)

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system.

31-420-314 MACHINE SHOP-BASIC ...lathe/drilling/milling machines, shapers, grinding machines, tool sharpening, bench work layout, measuring, inspection techniques, and machine part repair/fabrication.

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.

31-442-365 WELDING-INDUSTRIAL ...oxyacetylene process, oxyacetylene welding, brazing, cutting, metal arc welding, gas metal arc welding, and gas tungsten arc welding (ferrous and non-ferrous metals).

31-462-301 MECHANIC 1-INDUSTRIAL ...basic elements of mechanics: precision measurements, safe use of hand and power tools, industrial lift truck operation, sheet metal layout and fabrication, machine mounting bases and mechanical fasteners.

31-462-302 MECHANIC 2-INDUSTRIAL ...structural steel nomenclature and installation, safe and proper use of scaffolding, rigging and weight estimation, maintenance of hand and cutting tools, specialty tool fabrication, piping systems, and tubing systems. (Corequisites: 31-462-301, Mechanic 1 Industrial; 10-620-105, Rigging Systems 1; 10-804-101, Math 1-Trades)

31-462-303 MECHANIC 3-INDUSTRIAL ...basic metallurgy, functions of gaskets, packing and mechanical seals, lubrication properties and systems, bearing types and functions, electrical knowledge and safety. (Prerequisite: 31-462-302, Mechanic 2-Industrial)

31-462-304 MECHANIC 4-INDUSTRIAL ...belt drives, chain drives, power transmission couplings, gear drives, preventative maintenance. (Corequisite: 31-462-307, Mechanic 3-Industrial)

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 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 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 hygine 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 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 information 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 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. Students are required to complete a caregiver background check through www.CertifiedBackground.com. A fee is charged for this service. Additional information will be provided upon acceptance in the program.

COURSE DESCRIPTIONS

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

10-522-101 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 techniques 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 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 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

The Landscape Horticulture Associate Degree is a two-year, four-semester plus one summer program. Upon graduation, students will have completed 68 credits.

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
SEMESTER TOTAL		17

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
10-001-182	Irrigation	2
OR		
10-001-140	Plant Diagnostic Skills	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		68

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, Intro to Horticulture)

10-001-140 PLANT DIAGNOSTIC SKILLS ...science of making proper diagnoses of plant insects and disease problems and appropriate control strategies. Holistic diagnoses and sustainable methods will be emphasized. (Prerequisite: 10-001-110, Intro to Horticulture)

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, Intro Horticulture)

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, Intro Horticulture)

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-Intro)

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-Intro)

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, Intro to Horticulture)

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-Intro; 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.)

10-001-182 IRRIGATION ...irrigation practices, procedures, and equipment in the turf and landscape industry; design, installation, and operation of irrigation systems and components. (Prerequisite: 10-001-154, Turf Management)

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 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.
- 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, today's 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

It is recommended that students start with the courses in group 1, continue with group 2, move on to group 3 and finish with group 4. Within each group, students may take classes in whatever order is interesting or convenient for them. Students who follow these recommendations should have a smoother and more meaningful learning experience.

Upon graduation, a student will have completed 66 credits.

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 I	3
10-801-198	Speech	3
10-804-123	Math w Business Apps	3
TOTAL CREDITS		**18**

GROUP 2		
10-101-106	Accounting-for Non-Accountants	3
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		**15**

GROUP 3		
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		**18**

GROUP 4		
10-101-184	Business Finance/Budgeting	3
10-196-136	Safety-Workplace	3
10-196-145	Workplace Innovation	3
10-196-192	Managing-Quality	3
*10-196-196	Leadership Capstone	3
TOTAL CREDITS		**15**
TOTAL PROGRAM CREDITS		**66**

CURRICULUM NOTE
*It is strongly recommended that Leadership Capstone, 10-196-196, 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)

10-196-134 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.

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.

10-196-196 LEADERSHIP CAPSTONE ...leadership assessment, career research and planning; task management, human relations leadership, and professional self-development through the culminating experience of leading a real-life, hands-on project. (Prerequisites: 10-196-189, Team Building/Problem Solving; 10-196-190, Leadership Development; 10-196-188, Project Management Fundamentals; 10-801-136, English Composition I; 10-804-123, Math w Business Apps)

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 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.

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 machinist's 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

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.

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: 10-103-111, Micro: Windows Intro; 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 operation. (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. (Prerequisite: 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. (Prerequisite: 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; Corequisites: 32-420-303, Fixture and Tooling Design; 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. (Prerequisites: Accepted in the Machine Tool Operation or CNC program; 31-420-357, Machine Shop 4)

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. (Prerequisites: 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)

Machine Tool Operation   Program Code 314201 | 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

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 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.

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

The Machine Tool Operation Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER		CREDITS
10-103-111	Micro: Windows/Computer Basics	1
10-804-104	Math 2-Trades	2
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		18

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		34

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.

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: 10-103-111, Micro: Windows Intro; 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 Outcomes

- Apply the principles of mathematics, science and basic 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, 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

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.

FIRST SEMESTER	CREDITS
10-623-170 Engineering Materials - Intro	3
10-801-136 English Composition I	3
10-804-197 College Algebra & Trig w Apps	5
10-806-135 College Chemistry	5
SEMESTER TOTAL	16

SECOND SEMESTER	
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 I	4
SEMESTER TOTAL	16

SUMMER SEMESTER	
10-623-166 Manufacturing Engr Internship	1
SEMESTER TOTAL	1

THIRD SEMESTER	
10-420-170 Material Removal/Forming	3
10-606-126 Geometric Dimension/Toleran	2
10-606-157 Solidworks Fund and Drawings	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	
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	68

CURRICULUM NOTE
The following UW-Stout courses are required for Bachelor Degree competition:

SUMMER AFTER SEMESTER FOUR
MATH-250 Differential Equations/Linear Alg

SEMESTER FIVE
GEN ED Physical Well Being (2 credit)
MFGE-275 Thermodynamics/Heat Transfer (2 credit)
CHEM-341 Chemistry of Materials (4 credit)
MECH-294 Mechanics of Material (3 credit)
PHYS-282 University Physics II (5 credit)

SEMESTER SIX
MFGE-351 Mfg. Process Engineering I (3 credit)
MFGE-352 Mfg. Process Engineering II (3 credit)
ELEC-290 Circuits & Devices (4 credit)
STAT-330 Probability & Statics (3 credit)
MFGE-391 Fluid Mechanics (2 credit)

SUMMER AFTER SEMESTER SIX
GEN ED Humanities (3 credit)

SEMESTER SEVEN
INMGT-422 Quality Engineering (3 credit)
MFGE-363-B Adv. Controls/Instrument (2 credit)
MFGE-405 Capstone I: Product/
Syst. Design (3 credit)
GEN ED Gen Ed Technology (2 credit)
INMGT-335-B Lean Mfg. Systems 2 (2 credit)
MFGE-441 Design of Jigs/Fixtures/Tooling (3 credit)

SUMMER AFTER SEMESTER SEVEN
GEN ED English Comp 2 (3 credit)
GEN ED Humanities (3 credit)

SEMESTER EIGHT
MFGE-440 Design/Simulation Mfg.
Systems (3 credit)
MFGE-410 Capstone II: Mfg. Syst. Design (3 credit)
GEN ED Humanities (3 credit)
GEN ED Humanities (3 credit)
Machine Vision and Robotics (2 credit)

For further detail, go to: http://www.nwtc.edu/academics/ProgTeamSites/manufacturingengineering/Pages/home.aspx

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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.

10-420-168 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)

10-623-170 ENGINEERING MATERIALS - INTRO ...exposure to engineering materials, their properties, and behavior. Topics will include: material types, material testing, mechanical properties, heat treatment and materials selection. (Prerequisites: 10-806-135, College Chemistry; 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.)

Marine Construction   Program Code 314481 | 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

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 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.

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.
• Marine Welding students should take 31-421-333 Blueprint Reading II and other Marine Construction students have the option to take either 31-421-333 Blueprint Reading II or 31-421-362 Blueprint Reading/Sketching-Machine Trades 2.

Curriculum

The Marine Construction Technical Diploma is a one-year, three-semester program. Upon graduation, a student will have completed 41 credits.

ALL STUDENTS COMPLETE FIRST SEMESTER

10-442-102	Intro to Marine Production	3
10-448-210	Intro to Marine-Basic	1
31-421-334	Blueprint Reading I	2
OR		
31-421-355	Blueprint Rdg/Sket-Indus	2
31-442-301	Welding-Cutting/Visual	1
31-449-301	Electrical Safety	1
TOTAL CREDITS		**8**

MARINE WELDING FIRST SEMESTER

10-804-101	Math 1-Trades	2
31-442-317	Welding-Gas Metal Arc	5
31-442-335	Metal Fabrication I	3
TOTAL CREDITS		**10**

MARINE ELECTRICITY FIRST SEMESTER

10-413-314	DC Circuits	2
10-413-317	Fundamentals of Electricity	2
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
	Elective	1
31-448-364	Marine Electrical Codes	1
31-804-312	Math-Algebra/Trades	1
TOTAL CREDITS		**9**

ALL STUDENTS COMPLETE SECOND SEMESTER

31-421-333	Blueprint Reading II	2
OR		
31-421-362	Blueprint Rdg/Sket-Mach II	2
31-422-310	Metallurgy	2
31-448-363	Introduction to Marine Composites	3
SEMESTER TOTAL		**7**

MARINE WELDING SECOND SEMESTER

31-448-362	Marine Welding	3
31-442-321	Welding-Gas Tungsten Arc	5
31-442-334	Metal Fabrication II	2
TOTAL CREDITS		**10**

MARINE ELECTRICITY SECOND SEMESTER

31-413-327	Commercial Wiring Tech	2
31-413-328	Motors/Transformers	2
31-413-339	Industrial Controls	3
31-314-349	Electric Motor Control	2
10-413-334	AC Circuits	2
TOTAL CREDITS		**11**

ALL STUDENTS COMPLETE THIRD SEMESTER

10-103-111	Micro: Windows-Intro	1
10-182-111	Lean Operations	1
10-196-189	Team Building/Prob Solve	3
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		**6**
TOTAL PROGRAM CREDITS		**41**

CURRICULUM NOTE
• The third semester (summer) courses may be taken at the beginning or end of the program.

SUGGESTED ELECTIVES
Industrial Code, 31-413-345
Commercial Electrical Code, 31-413-346

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. (Corequisites: 31-804-312, Math-Algebra/Trades; 10-413-317, Fundamentals of Electricity)

10-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low-voltage wiring. (Corequisite: 10-413-346, 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)

10-413-334 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)

31-421-333 BLUEPRINT READING II ...develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings. (Prerequisites: Accepted into Welding or Marine Construction program; 31-421-331, Blueprint Reading 1)

31-421-334 BLUEPRINT READING I ...orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, welding symbols, weld joint nomenclature, welding joint geometry, metric conversion and interpretation of fabrications from prints. (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.

31-421-362 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)

31-422-310 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 WELDING-CUTTING/VISUAL ...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.)

31-442-317 WELDING-GAS METAL ARC (GMAW) ...welding safety, GMAW equipment/set up, joint details and distortion control, GMAW weld faults, welding metallurgy, and weld symbol interpretation. (Prerequisite: Accepted into Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-321 WELDING-GAS TUNGSTEN ARC ...perform gas tungsten arc welding (GTAW) in all positions, on plain carbon steel, aluminum, and 3XX stainless steel. (Prerequisite: Accepted into the Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-334 METAL FABRICATION II ...advanced metal fabrication tools developing assembly and sub-assemblies from working prints using various fabrication processes. Additionally, rigging and lifting, distortion control, and basic CNC programming will be incorporated. (Prerequisites: Accepted into the Welding OR Marine Construction program; 31-442-335, Metal Fabrication 1)

31-442-335 METAL FABRICATION I ...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: Accepted into the Welding or Marine Construction program; Corequisite: 10-804-101, Math 1-Trades)

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)

31-449-301 ELECTRICAL SAFETY ...standard first aid, CPR and OSHA 10-hour course as it relates to the electrical field.

Marine Engineering Technology   Program Code 104481 | 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 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 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 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

The Marine Engineering Technology-Associate Degree is a two-year four-semester program. Upon graduation, a student will have completed 67 credits.

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
SEMESTER TOTAL		16

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		67

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. (Corequisite: 10-614-235, Intro to CNC Mach/2D Prog)

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 ñ 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)

Marketing Program
Program Code 101043 | 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

Marketing prepares students to perform basic marketing functions in industrial, wholesale, retail, and service areas. Specific areas of study are sales, promotion principles, market research, and customer service.

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.

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 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:

Customer Service Representative: initiates follow-up work with current customers, processes and tracks customer orders, acts as an internal contact for customer inquiries as well as a liaison to field sales organizations, and uses telecommunications skills extensively.

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.

Marketing Research Assistant: researches market conditions to determine potential sales of product or service, examines and assists in analyzing data to forecast future marketing trends, and prepares reports and graphic illustrations of findings.

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.

Sales Representative: sells to other businesses such as factories, wholesalers, retailers, and institutions; sells business, financial, and consumer products and services; sets up displays; visits customers; does paperwork; writes correspondence; and studies literature relating to products.

Curriculum

The Marketing Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER		CREDITS
10-103-121	Micro: Word-Intro	1
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
SEMESTER TOTAL		17

SECOND SEMESTER		
10-103-141	Micro: Access-Intro	1
10-104-107	Marketing Comm-Integrated	3
10-104-191	Customer Service	3
10-104-198	Market Research	3
10-801-198	Speech	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		16

THIRD SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
10-102-100	Bus and Info Tech Occup Prep	1
10-104-120	Marketing Info Mgmt	3
10-104-176	Social Media Consumer Behavior	3
10-809-103	Think Critically & Creatively	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-102-150	Business Law & Ethics	3
10-104-119	Social Media Marketing	3
10-104-125	Event Marketing	3
10-104-183	Personal Brand-Portfolio	1
10-104-189	Sales Management	3
10-104-199	Mktg Internship Practicum	2
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		18
TOTAL CREDITS		67

With additional education and/or work experience, graduates may find other opportunities for employment.
• Business Owner
• Customer Service Manager
• Insurance Agent
• Marketing Manager
• Promotions Manager
• Real Estate Salesperson
• Sales Manager

The following certificates/technical diplomas may be applied toward this program:
• 9010411, Contact Center
• 901049, Customer Service
• 901047, Promotions & Event Management

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.

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.

10-104-101 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.

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).

10-104-176 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. (Prerequisite: 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.

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.

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)

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 (ECN's)/
Engineering Change Requests (ECR's).

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.
• 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;
Solidwork Fundamentals, and 10-606-163;
Solidworks Intermediate, and 10-606-164;
Solidworks Assemblies/Drawings, and
10-606-165; Solidworks Sheet Metal, and
10-606-167; Solidworks Loft/Surface.

Curriculum
The Mechanical Design Technology
Associate Degree is a two-year
program. Upon graduation, a student
will have completed 68 credits.

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
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
10-804-196	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		68

SUGGESTED ELECTIVES
10-660-104, DC 1: Introduction
10-660-105, DC 2: Circuits
10-660-107, AC 1: Properties

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. (Corequisite: 10-614-
235, Intro to CNC Mach/2D Prog)

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)

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

Board/Certification Examinations

• Graduates are eligible to take
  the national examination for
  Certified Medical Assistants.
• 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 details, please refer to the part-time Medical Assistant brochure.

Requirements for Program Application

• Completed application.
• High school transcript or equivalent.
  For a list of equivalents, go to www.
  nwtc.edu/gettingstarted.

Curriculum

The Medical Assistant Technical Diploma is a one year, two-semester, plus three-week program. Upon graduation, a student will have completed 32 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
*31-509-301	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		18

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		32

CURRICULUM NOTE
*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.

• Admission Assessment or equivalent or
  ACT assessment taken within the last
  three years. For a list of equivalents,
  please contact a counselorat (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)
  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 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.
• 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 certificate(s)/
technical diploma(s) may be
applied toward this program:
• 905012, Health Care Customer
  Service Representative Certificate

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: 10-509-302, Human Body in Health/Disease; 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 Prcoedures 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; 10-501-101; 10-501-107; 31-509-304; 31-509-301; 31-509-302; Pre/Corequisites: 31-509-306; 31-509-307; 31-509-309; 31-509-310)

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; 31-509-304; 31-509-303; 31-509-302; 10-501-101; 10-501-107; Pre/Corequisites: 31-509-305; 31-509-307; 31-509-309; 31-509-310)

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 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. 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 or waitlist status will be granted. 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.
• Complete mandatory four-hour job shadow.
• Attend mandatory spring program orientation.

Curriculum
The Medical Laboratory Technician Associate Degree is a two-year, five-semester program. Upon completion, a student will have completed 67 credits.

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
SEMESTER TOTAL		**17**

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		**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.

++ 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.

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 Diagnostics, 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)

Network Specialist Program Code 101502 | 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
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; 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 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 Administrator
- PC Support Specialist
- Help Desk Technician
- IS Certifications, such as MSCE,

A+, Network+, and CCNA
- Network Analyst

The following certificates/technical diplomas may be applied toward this program:
- 901502, Networking Certificate

Curriculum
The Network Specialist - IT Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER — CREDITS

Course	Title	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
SEMESTER TOTAL		18

SECOND SEMESTER

Course	Title	Credits
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
10-150-181	IT:Network: Virtualization	2
10-801-196	Oral/Interpersonal Comm	3
10-809-195	Economics	3
SEMESTER TOTAL		17

THIRD SEMESTER

Course	Title	Credits
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

Course	Title	Credits
10-150-170	IT:Network:Capstone	2
10-150-173	IT:Network:Cisco 3	3
10-150-188	IT:Network:Apps-Microsoft	4
10-150-199	IT:Network: Intern Practicum	2
10-809-166	Intro to Ethics: Theory & App	3
	Elective	3
SEMESTER TOTAL		17
TOTAL CREDITS		68

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

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)

10-150-157 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.

10-150-181 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)

10-150-188 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. (Prerequistes: 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 71credits.

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 I	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 Managemen	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 I	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.

10-624-156 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)

Nursing Assistant   Program Code 305431 | 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
Nursing Assistants assist in providing care of sick or injured patients under the supervision of the nursing and/or medical staff.

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, workbook and Blackboard assignments must be completed before attending clinical.
• Class requirements include work on the Internet and DVD viewing. Access to high speed Internet and a DVD player 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, 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.

Curriculum
The Nursing Assistant Technical Diploma is a 120-hour program which includes skill pre-work, lecture, lab and clinical. Upon graduation, a student will have completed three credits. Orientation will be done during the first class.

FIRST SEMESTER	CREDITS
30-543-300 Nursing Assistant	3
SEMESTER TOTAL	3
TOTAL CREDITS	3

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program Benchmarks are Reading Comprehension, 55. 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.
• 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.
• 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 into the Nursing Assistant program by completing a four-step admission process)

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. 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:
National League for Nursing Accrediting Commission (NLNAC)
3343 Peachtree Road, NE, Suite 850
Atlanta GA 30326
(212) 363-5555 FAX: (212) 812-0391

The Nursing-Associate Degree program is approved by:
Wisconsin Department of Safety and Professional Services
1400 East Washington Ave.
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 application, an Academic Skills Assessment (Accuplacer) or ACT assessment with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 18; Reading Comprehension, 21: Sentence Skills, 21. 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.

• 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.

Curriculum

The Nursing-Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 70 credits.

PRE-SEMESTER	CREDITS
*10-806-186 Intro to Biochemistry	4
SEMESTER TOTAL	**4**

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 & Profess Concepts	2
**10-543-115 Nsg: Adv Clinical Practice	3
*10-543-116 Nursing Clinical Transition	2
10-809-196 Intro to Sociology	3
Elective	1
SEMESTER TOTAL	**14**
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.

** Must complete 10-543-115, Advanced Clinical Practice, with a "B" prior to the start of 10-543-116, Clinical Transition.

• 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.

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 evidence-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; 10-806-177, Gen Anatomy & Physiology)

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 ... 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: 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; 10-809-188, Developmental Psychology; Corequisites: 10-543-108, Nsg:Intro to Clinical Care Mgmt; 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; 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; 10-543-107, Clinical Care Across Lifespan; 10-543-108, Nsg Intro to Clinical Care Mgmt; 10-801-196, Oral/Interpersonal Communiction; 10-806-179, Adv Anatomy & Physiology; 10-801-136, English Composition I)

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 Communiction; 10-806-179, Adv Anatomy & Physiology)

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 Communiction; 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; Corerequisites: 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; Corerequisites: 10-806-197, Microbiology; 10-543-109, Nsg Complex Hlth Alter 1; 10-543-111, Nsg Int Clinical Practice; 10-809-198, Intro to Psych)

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: Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Conc; 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 Conc; 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: Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Conc; 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nsg Adv Skills; 10-806-197, Microbiology; Corequisites: 10-543-113, Nsg: 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: Health Alter 1; 10-543-110, Nsg: Mental Hlth & Comm Conc; 10-543-111, Nsg: Int Clinical Practice; 10-543-112, Nursing Adv Skills; 10-806-197, Microbiology)

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

- Communicate business messages effectively.
- Prioritize and manage workflow.
- Select appropriate technology to perform office tasks and manage information.
- Use efficient techniques and appropriate resources in a business environment.
- Plan events, travel, conferences, and meetings.
- Research, analyze, and present information.
- Integrate appropriate software to produce effective business documents.
- Demonstrate professionalism in a business environment.
- Contribute to team process using leadership principles.

Requirements for Program Entry

- Completed application.
- High school transcript or equivalent. For a list of equivalents, go to www.nwtc.edu/gettingstarted.
- Basic math.
- A minimum keyboarding skill of 20 words per minute using the TOUCH method is recommended.
- 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, 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:

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.
- Administrative Professional
- Executive Assistant
- Team Leader
- Office Manager

The following certificates/technical diplomas may be applied toward this program:
- 901021, Software Level 1 Certificate

Curriculum

The Office Professional Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 36 credits.

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
10-106-112	Keyboard-Speed Building 2	1
10-106-131	Proofreading/Editing Essen 1	3
10-106-153	Professional Profile	3
10-804-123	Math w Business Apps	3
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
10-801-136	English Composition 1	3
SEMESTER TOTAL		19
TOTAL CREDITS		36

CURRICULUM NOTE

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

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.

10-106-112 KEYBOARD-SPEED BUILDING 2 ...skill development on the alphabetic keyboard, top-row number keys, and 10-key pad using analytic/ diagnostic software. Requires touch keyboarding at 45 wpm. (Corequisite: 10-106-107, Keyboard-Speed Building 1)

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. (Prerequisite: 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.

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: 10-106-112, Keyboard-Speed Building 2; 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 315161 | 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
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 maintain appointment schedule, maintain patient records, process 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
- Application
- Application Fee
- Entrance Assessment Scores: Arithmetic 79; Reading Comprehension 74; Sentence Structure 88; Algebra - N/A
- Transcripts
- Program Advising Session
- Background Check
- Health/TB/Tetanus Form
- Functional Abilities Statement of Understanding Form

Employment Potential
- Optometric Assistant
- Opthalmic Assistant
- Ophthalmic Medical Assistant
- Optical Assistant
- Contact Lens Technician

Note
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.

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 44 credits.

FIRST SEMESTER	CREDITS
10-501-101 Medical Terminology	3
10-501-107 Intro to Health Care Computing	2
10-809-199 Psychology Of Human Relations	3
31-501-301 Learning Strategies for Health	1
31-806-312 Anatomy/Struct-Funct	2
SEMESTER TOTAL	11

SECOND SEMESTER	
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
31-516-306 Basic Ocular Science	4
SEMESTER TOTAL	16

THIRD SEMESTER	
10-501-104 Healthcare Customer Serv.	2
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	17
TOTAL CREDITS	44

CURRICULUM NOTE
Suggested 1st Semester Course: 31-501-301, Learning Strategies for Health Care, 1 credit

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: 10-509-302, Human Body in Health/ Disease; 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 SCIENCEÖintroduces 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. (Corequisite: 31-516-302, Optical Dispensing)

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. (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. (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)

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. Remediation will be strongly recommended for those students not meeting the program benchmarks.

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.
• 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, 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 as a Paralegal or Legal Assistant. Paralegals are not authorized to practice law. Paralegals perform work under the supervision of a lawyer in a variety of settings. A graduate may be employed by a private law firm; insurance company, corporation, bank, private business; legal clinic; agency of the federal, state, or local government; legal service or legal aid office; law departments; special interest group or association; criminal law 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.

Curriculum

The Paralegal Associate Degree is offered in the day and in the evening. It is a two-year, four-semester program. The program offers both full- and part-time completion options. Upon graduation, a student will have completed 66 credits.

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
SEMESTER TOTAL		15

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 I	3
10-110-104	Legal Research	3
10-110-110	Real Estate Law	3
(or ** specialty course 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 ** specialty course 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 ** specialty course 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		66

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).

** Students must take 4 of 8 legal specialty courses below:
10-110-106 Family Law
10-110-110 Real Estate Law
10-110-114 Estates and Probate
10-110-115 Administrative Law
10-110-122 Creditor/Debtor Relations
10-110-160 Employment Law
10-110-168 Paralegal Criminal Procedures
10-110-169 Indian Law

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: 10-110-101, 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: 10-110-101, 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 "C" 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 "C" 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 "C" 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 "C" 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 "C" 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 "C" 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 "C" 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 "C" 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 "C" 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 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent)

Paramedic Program

Program Code 305312 | 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 effectively with others.
- Demonstrate professional behavior.
- Meet 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 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.
- 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

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 "C" or better, meet the program benchmark scores for the Nursing-Associate Degree program,

Curriculum

The Paramedic Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have successfully completed 36 credits.

FIRST SEMESTER		CREDITS
*10-531-121	Paramedic Clinical 1	4
*10-531-124	Paramedic Lab 1	2
*10-531-130	Paramedic Principles 1A - EMS	3
*10-531-131	Paramedic Principles 1B-Shock	3
*10-531-132	Paramedic Principles 1C-Respir	3
*10-531-133	Paramedic Principles 1D-Cardio	3
SEMESTER TOTAL		18

SECOND SEMESTER		
*10-531-123	Paramedic Clinical 2	4
*10-531-125	Paramedic Lab 2	2
*10-531-137	Paramedic Principles 2A-Cardio	3
*10-531-138	Paramedic Principles 2B-OB/GYN	3
*10-531-139	Paramedic Principles 2C-Trauma	3
*10-531-140	Paramedic Principles 2D-EMS Op	3
SEMESTER TOTAL		18
TOTAL CREDITS		36

CURRICULUM NOTE

Additional Required Courses for Licensure: The courses below, totaling 216 clinical hours, are necessary to fulfill the eligibility requirements for licensure exams:

10-531-104, Paramedic Clinical 3A
10-531-105, Paramedic Clinical 3B

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).

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.

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.

COURSE DESCRIPTIONS

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

10-531-121 PARAMEDIC CLINICAL 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 approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course.

10-531-123 PARAMEDIC CLINICAL 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 approved preceptors. Students may also have the opportunity to participate in formal high-fidelity human patient simulator experiences as a part of this course. (Prerequisite:10-531-121 Paramedic Clinical 1)

10-531-124 PARAMEDIC LAB 1 ... 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 patient.

10-531-125 PARAMEDIC LAB 2 ... 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. This course provides the student 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 for each student will be complied and/or documented within this course as required by the DHS-approved paramedic curriculum. (Prerequisite: 10-531-124 Paramedic Lab 1)

10-531-130 PARAMEDIC PRINCIPLES 1A -EMS Foundation ...provides the paramedic student with comprehensive knowledge of EMS systems, safety, wellbeing, 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. (Prerequisite: Accepted in Paramedic program. Corequisites: 10-531-131, Paramedic Principles 1B - Shock and Pharmacology; 10-531-132, Paramedic Principles 1C - Respiratory; 10-531-133, Paramedic Principles 1D - Basic Cardiology)

10-531-131 PARAMEDIC PRINCIPLES 1B SHOCK AND PHARMACOLOGY... This course provides the paramedic student with the comprehensive knowledge of patient shock and pharmacology required to formulate and administer a pharmacological treatment plan intended to mitigate emergencies and improve the overall health of the patient. (Corequisites: 10-531-130, Paramedic Principles 1A - EMS Foundation; 10-531-132, Paramedic Principles 1C - Respiratory; 10-531-133, Paramedic Principles 1D - Basic Cardiology)

10-531-132 PARAMEDIC PRINCIPLES 1C - RESPIRATORY ...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 patent 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: 10-531-130, Paramedic Principles 1A EMS - Foundation; 10-531-131, Paramedic Principles 1B - Shock and Pharmacology; 10-531-133, Paramedic Principles 1D - Basic Cardiology)

10-531-133 PARAMEDIC PRINCIPLES 1D - BASIC 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: 10-531-130 Paramedic Principles 1A - EMS Foundation; 10-531-131,1B - Shock and Pharmacology; 10-531-132, Paramedic Principles 1C - Respiratory)

10-531-137 PARAMEDIC PRINCIPLES 2A - ADVANCED 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. (Corequisite: 10-531-138 Paramedic Principles 2B - Neurology and OB/GYN)

10-531-138 PARAMEDIC PRINCIPLES 2B - OB/GYN AND NEUROLOGY... 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: 10-531-137, Paramedic Principles 2A - Advanced Cardiology; 10-531-139, Paramedic Principles 2C-Trauma and Pediatrics; 10-531-140, Paramedic Principles 2D - EMS Operations)

10-531-139 PARAMEDIC PRINCIPLES 2C - TRAUMA AND PEDIATRICS ...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: 10-531-137, Paramedic Principles 2A - Advanced Cardiology; 10-531-138, Paramedic Principles 2B - Neurology and OB/GYN; 10-531-140, Paramedic Principles 2D-EMS Operations)

10-531-140 PARAMEDIC PRINCIPLES 2D - EMS Operations ... 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 relative to the operational aspects of EMS. (Corequisites: 10-531-137, Paramedic Principles 2A -Advanced Cardiology; 10-531-138, Paramedic Principles 2B - Neurology and OB/GYN; 10-531-119, Paramedic Principles 2C - Trauma and Pediatrics)

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

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.

Functional Abilities
Functional abilities are the basic duties that a student must be able to perform with or

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
10-510-102	Health Insurance & Reimburse	3
10-536-110	Pharmaceutical Calculations	3
10-536-112	Pharmacy Business Apps	4
10-536-115	Pharmacy Law	2
10-536-120	Fundamentals of Reading Prescr	1
10-536-138	Pharmacy Community Clinical	2
SEMESTER TOTAL		18

SECOND SEMESTER		
10-536-122	Pharmacology	3
10-536-124	Pharmacy Drug Distribution	1
10-536-126	Pharmacy Parenteral Admixtures	3
10-536-140	Pharmacy Hospital Clinical	3
10-536-141	Hospital Clinical Lab	2
OR		
10-536-142	Pharmacy Community Clinical	2
10-801-196	Oral/Interpersonal Comm	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		18
TOTAL CREDITS		36

CURRICULUM NOTE
Catalog numbers assigned to "elective" classes are for administrative use only. Consult with your program counselor regarding your elective selection.

Program start dates vary; check with your counselor for details.

Curriculum and program acceptance requirements are subject to change.

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.

10-510-102 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)

10-536-112 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. (Corequisite: 10-536-138, Pharmacy Community Clinical; Condition: 315361 Pharmacy Technician Admissions 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)

10-536-124 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)

10-536-138 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. (Corequisites: 10-536-120, Fund of Reading Prescriptions; 10-536-112, Pharmacy Business Applications; 10-536-110, Pharmaceutical Calculations or 10-536-193, Calculations for Working PT and 10-501-102, Health Insurance & Reimbursement and Condition: 315361, Pharmacy Technician)

10-536-140 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: 10-536-138, Pharmacy Community Clinical; 10-536-110, Pharmacy Calculations; Corequisites: 10-536-141, Hospital Clinical Lab; 10-536-126, Pharmacy Parenteral Admixtures; Condition: 315361, Pharmacy Technician Admissions Requirements Met)

10-536-141 HOSPITAL CLINICAL LAB ...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: 10-536-138, Pharmacy Community Clinical; Corequisites: 10-536-140, Pharmacy Hospital Clinical; 10-536-126, Pharmacy Parenteral Admixtures; Condition: 315361, Pharmacy Technician Admissions Requirements Met)

10-536-142 PHARMACY COMMUNITY CLINICAL-ADVANCED ...pharmacy services in areas of diabetes services, immunization programs, durable medical equipment, automated dispensing systems, patient education, and over-the-counter products, in addition to traditional community services. This course involves a hands-on component in a community pharmacy and a research component.

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 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, 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:

Portrait Photographer

Wedding Photographer

Photojournalist

Nature Photographer

Sports Photographer

Event Photographer

Commercial Photographer

Digital Imaging Specialist

Film 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

The Digital Photography Technical Diploma is a three-semester program. Upon graduation, a student will have completed 38 credits.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-203-104	Photography-Digital	3
10-203-126	Photography-DSLR Video	1
10-804-123	Math w Business Apps	3
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		12

SECOND SEMESTER		
10-203-120	Photography-Landscape/Nature	1
10-203-122	Photography-Sports/Events	1
10-203-125	Photography-Night/Low Light	1
10-203-127	Photography-Print & Color Mgmt	1
10-203-178	Photography-Digital Advanced	3
10-203-180	Photography-Digital Workflow	3
10-203-187	Photography-Digital Editing	3
SEMESTER TOTAL		13

THIRD SEMESTER		
10-145-186	Financial Management-Small Bus	3
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
10-203-189	Photography-Digital Editing Ad	3
SEMESTER TOTAL		13
TOTAL CREDITS		38

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. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

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.

10-145-189 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. (Prerequisite: 10-145-186, Financial Management - Small Business)

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: 10-145-186 Financial Management-Small Business, 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 frofiling techniques, color managment 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. (Prerequisite: 10-111-103, Macintosh-Intro)

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)

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 a 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 as 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. 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 or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact a counselor 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.

Flexible Learning Option

A part-time track is available. This option is scheduled over an eleven-semester, four-year period including summer semesters. Individuals must request this option on their application.

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 profession, 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)

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. (Prerequisite: 10-524-147, PTA Clinical Practice 1)

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; Corequisite: 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)

Power Engineer and Boiler Operator
Program Code 304281 | 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

Power Engineer and Boiler Operator prepares students to manage, operate, and control low (<15# steam pressure and high 15> pressure) boilers and auxiliary systems in factories, plants, and buildings.

Program Outcomes

- Be skilled in the management of energy conservation.
- Define industry safety standards and concepts.
- Explain operation of power engineering equipment.
- Study the National Institute for Uniform Licensing of Power Engineering (NIULPE) Standards.
- Describe boiler operation effects on emission.
- Describe water treatment fundamentals related to power engineering equipment.
- Describe power engineering related to control fundamentals.
- Recognize power engineering related equipment type and terminology.
- Identify power engineering firing methods for different fuel types.
- Apply natural science fundamentals to power engineering industry.
- Relate electricity basics and general principles to power engineering.

- Study American Society of Power Engineers (ASOPE) Standards and Testing

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, 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

3rd or 4th Class Power Engineer/Boiler Operator: controls the operation of a boiler by reading gauges and varying fuel and water inputs.

Curriculum

The Power Engineer and Boiler Operator Technical Diploma is a two-year, part-time program. Upon graduation, a student will have completed 16 credits.

FIRST SEMESTER		CREDITS
30-403-338	Power House-Blueprint Rdg	1
30-413-347	Power House-Electric Sys	2
30-428-334	Power Engineering II	3
30-428-344	Power Engineering I	3
SEMESTER TOTAL		9

SECOND SEMESTER		CREDITS
10-196-191	Supervision	3
10-804-101	Math 1-Trades	2
30-413-345	Power House-Control Sys	1
30-428-337	Power House-Economics	1
SEMESTER TOTAL		7
TOTAL CREDITS		16

Boiler Service Technician: services and repairs valves, fittings, and boiler tubes that are leaking or malfunctioning.

Boiler Installer: installs boilers, piping, controls, and auxiliary equipment.

Boiler Chemical Sales Representative: tests boiler water for chemical content and recommends additives to correct the water chemical content.

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

- Boiler Fuel Consultant
- Boiler Inspector
- Field Engineer
- Power Plant Supervisor

COURSE DESCRIPTIONS

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

30-403-338 POWER HOUSE-BLUEPRINT READING ...learn the different types and content in architectural/engineering plan sets and specifications including civil/site work, architectural, structural, fire protection, mechanical, electrical and plumbing disciplines. Learn to use architectural and engineering scales.

30-413-345 POWER HOUSE-CONTROL SYSTEMS ...boiler combustion controls, ignition systems and sequencing, burner management systems (BMS), process instrumentation loops, boiler start-up/shut down, problem solving and troubleshooting techniques.

30-413-347 POWER HOUSE-ELECTRICAL SYSTEMS ...principles of electricity, tools required to troubleshoot, safety control, low-volt systems, utility provided power, troubleshooting power systems, motors and controller, wiring methods, transformers, and testing equipment.

30-428-334 POWER ENGINEERING II ...advanced training regarding the principles and operational techniques associated with power/heating boilers and electrical generation. Prepare students with competencies to take the ASOPE exam. (Prerequisite: 30-428-344, Power Engineering I)

30-428-344 POWER ENGINEERING I ...basic thermodynamic principles, boiler types and terminology, boiler operation and maintenance including water treatment. Provides students with the competencies to prepare for the appropriate ASOPE exam.

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
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.

Curriculum

The Practical Nursing Technical Diploma is a three-semester program. Upon graduation, a student will have completed 30 credits.

FIRST SEMESTER		CREDITS
10-801-136	English Composition 1	3
*31-806-312	Anatomy/Struct-Funct	2
SEMESTER TOTAL		5

SECOND SEMESTER		
10-809-188	Developmental Psychology	3
*31-543-301	Nursing Fundamentals	2
*31-543-302	Nursing Skills	3
*31-543-303	Nursing Pharmacology	2
*31-543-304	Nsg:Intro to Clinical Practice	2
SEMESTER TOTAL		12

THIRD SEMESTER		
10-801-196	Oral/Interpersonal Comm	3
*31-543-305	Nursing Health Alterations	3
*31-543-306	Nursing Health Promotion	3
*31-543-307	Nsg:Clin Care Across Lifespan	2
*31-543-308	Nsg:Intro Clinical Care Mgt	2
SEMESTER TOTAL		13
TOTAL CREDITS		30

CURRICULUM NOTE
*No final grade lower than a "B" is acceptable in the nursing 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.

**No final grade lower than a "C" is acceptable in the natural science course marked with a "double" asterisk.

Individuals with criminal records may be ineligible for licensure. Individuals with abuse records may be ineligible for employment in nursing homes.

It is suggested that a Medical Terminology course (10-501-101) be taken prior to entering the program.

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 application, an Academic Skills Assessment (Accuplacer) or ACT assessment with appropriate benchmark scores is necessary. Program Benchmarks are Arithmetic, 80; Reading Comprehension, 78: Sentence Skills, 90. 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.

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 77-858-759, BE Reading Prep IIB 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 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:

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

The Print Technology Technical
Diploma is a one-year, two-semester
program. Upon graduation, students
will have completed 31 credits.

FIRST SEMESTER		CREDITS
10-111-103	Macintosh-Intro	1
10-111-161	Macintosh Illustration	3
10-204-110	Publishing Technologies	3
10-204-111	Digital Publishing Operations	3
10-204-124	Variable Data Publishing	3
10-801-136	English Composition 1	3
SEMESTER TOTAL		16

SECOND SEMESTER		
10-111-101	Macintosh-Image Editing	3
10-111-125	Graphic Reproduction Tech	3
10-204-126	Digital Print Applications	3
10-204-130	Wide Format Graphics	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		15
TOTAL CREDITS		31

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. (Corequisite:
10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO
...explore the Macintosh Operating System
and applications including iPhoto, iTunes,
iMovie, GarageBand, FontBook, Sherlock,
iCal, AddressBook and Dashboard.
Learn to navigate the Mac Operating
System and manage files and folders.

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:
10-111-103, Macintosh-Intro)

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.
(Corequisite: 10-111-103, Macintosh-Intro)

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:10-111-103, Macintosh-Intro)

10-204-111 DIGITAL PUBLISHING
OPERATIONS ...press equipment,
processors, inks, print quality, job
tickets, standard operating procedures,
densitometers, printing problems, and
trapping situations. (Prerequisite: 10-
111-103, Macintosh-Intro; 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.

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)

10-204-130 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 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.
- 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.

Curriculum

The Prototype and Design Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

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
SEMESTER TOTAL		**18**

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		**68**

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: Creats 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

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. (Corequisite: 10-614-235, Intro to CNC Mach/2D Prog)

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 burring and polishing.

Radiography Program Code 105261 | 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 perform routine radiographic imaging of the body. They work closely with physicians and may assist in the performance of invasive procedures. After completion of the program, many students may choose to acquire advanced certificates in Mammography, Bone Densitometry, Computer Tomography (CT), and/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 including clinics, hospitals and private practice physician 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, 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 are qualified to take the American Registry in Radiography Technologist (ARRT) Examination.

Requirements for Program Application
- Completed application and all items listed below.
- High school transcript or equivalent. (For a list of equivalents, go to www.nwtc.edu/getting started.)
- As a requirement for program application, 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. Students not meeting these benchmarks or the equivalent will be granted pre-program status and will be required to establish an individualized academic plan. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982.
- Two semesters in High School, or one semester in College of 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:
- Three references from professional or academic experiences submitted on NWTC forms.
- An essay (no more than 1,000 words) completed on campus in the Assessment Center. The essay must include 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 Selection Committee. Candidates are ranked in the following categories: Assessment, Math/Science, Essays, References. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have pre-program status with an opportunity to be considered with the following year's applicants.

Curriculum
The Radiography Associate Degree is a two-year, two-summer, six-semester program. Upon graduation, a student will have completed 70 credits.

SUMMER SEMESTER		CREDITS
10-804-107	College Mathematics	3
++10-806-177	Gen Anatomy & Physiology	4
SEMESTER TOTAL		7

FIRST SEMESTER		
*10-526-149	Radiographic Procedures 1	5
*10-526-158	Introduction to Radiography	3
*10-526-159	Radiographic Imaging 1	3
*10-526-168	Radiography Clinical 1	2
*10-526-195	Radiographic Quality Analysis	2
SEMESTER TOTAL		15

SECOND SEMESTER		
*10-526-170	Radiographic Imaging 2	3
*10-526-191	Radiographic Procedures 2	5
*10-526-192	Radiography Clinical 2	3
*10-526-193	Radiography Clinical 3	3
*10-526-194	Imaging Equipment Operation	3
SEMESTER TOTAL		17

SUMMER SEMESTER		
*10-526-193	Radiography Clinical 4	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		6

THIRD SEMESTER		
*10-526-189	Radiographic Pathology	1
*10-526-190	Radiography Clinical 5	2
*10-526-196	Modalities	3
10-801-196	Oral/Interpersonal Comm	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		12

FOURTH SEMESTER		
*10-526-174	ARRT Certification Seminar	2
*10-526-197	Radiation Protection & Biology	3
*10-526-198	Radiography Clinical 6	2
10-801-136	English Composition 1	3
10-809-166	Intro to Ethics: Theory & App	3
SEMESTER TOTAL		13
TOTAL CREDITS		70

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.

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.

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. (Corequisite: 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. 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 or waitlist status will
  be granted. To learn more about these
  assessments and program benchmark
  scores, please contact a counselor at
  (920) 498-5444 or (888) 385-6982.

Curriculum
The Respiratory Therapist Associate
Degree is a two-year, one-summer, five-
semester program. Upon graduation, a
student will have completed 70 credits.

FIRST SEMESTER		CREDITS
*10-501-101	Medical Terminology	3
*10-515-111	Respiratory Survey	3
10-801-196	Oral/Interpersonal Comm	3
*10-806-177	Gen Anatomy & Physiology	4
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

SECOND SEMESTER		
*10-515-171	Respiratory Therapeutics 1	3
*10-515-173	Respiratory Pharmacology	3
*10-515-174	Respiratory/Cardiac Physiology	3
10-801-136	English Composition 1	3
*10-806-197	Microbiology	4
SEMESTER TOTAL		16

SUMMER SEMESTER		
*10-515-172	Respiratory Therapeutics 2	3
*10-515-175	Respiratory Clinical 1	2
SEMESTER TOTAL		5

THIRD SEMESTER		
*10-515-112	Respiratory Airway Management	2
*10-515-113	Respiratory Life Support	3
*10-515-176	Respiratory Disease	3
*10-515-178	Respiratory Clinical 2	3
*10-515-179	Respiratory Clinical 3	3
10-809-196	Intro to Sociology	3
SEMESTER TOTAL		17

FOURTH SEMESTER		
*10-515-164	Clinical Simulation Review	2
*10-515-180	Respiratory Neo/Peds Care	2
*10-515-181	Respiratory/Cardio Diagnostics	3
*10-515-182	Respiratory Clinical 4	3
*10-515-183	Respiratory Clinical 5	3
10-809-172	Intro to Diversity Studies	3
SEMESTER TOTAL		16
TOTAL CREDITS		70

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.

• Attend mandatory spring
  program orientation.
• 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 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 antimicobials. (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
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 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.

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.

Curriculum
The Solar Energy Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

FIRST SEMESTER		CREDITS
10-442-150	Machine Fabrication 1	1
10-480-101	Energy-Intro Renew & Sustain	4
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
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-804-118	Interm Algebra w Apps	4
SEMESTER TOTAL		**17**

SECOND SEMESTER		
10-482-126	Intro to Solar	4
10-482-132	Photovoltaics-Design & Site	3
10-620-140	Machine Wiring and Safety	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-110	Electronics 1: Diodes-Basic	1
10-804-196	Trigonometry w Apps	3
10-806-143	College Physics 1	3
SEMESTER TOTAL		**17**

THIRD SEMESTER		
10-403-100	Blueprint Reading Intro	1
10-481-114	Intro to Energy Management	3
10-482-133	Photovoltaics-Advanced	4
10-483-107	Solar Thermal Design & Site	3
10-605-157	Power Electronics 1: Devices	1
10-605-158	Power Electronics 2: Drives	1
10-801-136	English Composition 1	3
SEMESTER TOTAL		**16**

FOURTH SEMESTER		
10-483-106	Solar Advanced System Design	4
10-483-108	Solar Thermal-Advanced	4
10-801-197	Technical Reporting	3
10-809-172	Intro to Diversity Studies	3
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**67**

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 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 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: 10-483-104, Solar Thermal Site Assessor; 10-482-120, Photovoltaics-Design & Site; 10-482-125, Photovoltaics-Adv; Corequisite: 10-483-105, Solar Thermal Installation)

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, 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)

10-660-110 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)

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 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:

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

The Supply Chain Management Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 67 credits.

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
10-104-110	Marketing Principles	3
OR		
10-104-148	Global Marketing	3
10-182-110	Lean Operations Mgmt	3
10-182-157	Logistics/Supply Chain Mgmt	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		**16**

SECOND SEMESTER		
10-101-106	Accounting-for Non-Accountants	3
OR		
10-101-184	Business Finance/Budgeting	3
10-102-160	Global Business Mgmt	3
10-104-191	Customer Service	3
10-182-127	Purchasing	3
10-182-190	Transportation Mgmt	3
10-801-136	English Composition 1	3
SEMESTER TOTAL		**18**

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-182-120	Enterprise Resource Plan/Cont	3
10-182-160	Global Supply Chain Mgmt	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
10-182-131	Negotiations	3
10-182-199	Supply Chain Intern Practicum	2
10-182-197	Sup Chain Field Research	2
10-809-195	Economics	3
10-809-199	Psychology Of Human Relations	3
	Elective	3
SEMESTER TOTAL		**17**
TOTAL CREDITS		**67**

SUGGESTED ELECTIVES
10-196-189 Team Building/Problem Solving
10-102-184 Global Business Cultures

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)

10-102-100 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.

10-102-104 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.

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.

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, 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)

10-104-110 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.

10-104-191 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.

10-182-110 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.

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.

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.

10-182-190 TRANSPORTATION MANAGEMENT ...importance of transportation, transportation regulations/ public policy, overview of transportation providers (motor carriers, railroads, air carriers, inter-modal and special carriers), costing/pricing transportation, transportation documentation, transportation management technology systems/processes.

10-182-199 SUPPLY CHAIN 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 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
7108-C South Alton Way, Suite 150
Englewood, CO 80112
(303) 694-9262
FAX (303) 689-0518

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 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. 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 and waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact a counselor 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.

Curriculum

The Surgical Technologist Technical Diploma is a three-semester program. Upon graduation, a student will have completed 37 credits.

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
*31-509-302 Human Body in Health & Disease	3
*31-512-326 ST: Infection Control	2
SEMESTER TOTAL	11

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
*31-512-339 ST: Bridge to Clinical 2	1
SEMESTER TOTAL	13
TOTAL CREDITS	37

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.

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.

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; Corequisite: 31-512-331, ST: Surgical Procedures; 31-512-339, 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)

31-512-339 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 product.
- 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 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 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

The Sustainable Food & Agricultural Systems Associate Degree is a two-year, four-semester plus one summer program. Upon graduation students will have completed 62 credits.

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
SEMESTER TOTAL		**16**

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
10-090-126	Spring Ag Internship	2
10-806-112	Principles of Sustainability	3
10-809-103	Think Critically & Creatively	3
SEMESTER TOTAL		**14**

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
10-101-190	Accounting-QuickBooks	1
10-104-101	Selling Principles	3
10-801-197	Technical Reporting	3
SEMESTER TOTAL		**14**

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**

SUMMER SEMESTER		CREDITS
10-090-127	Summer Ag Internship	2
SEMESTER TOTAL		**2**
TOTAL CREDITS		**62**

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... How do 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. What works, what is the cost, and can one 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, what are the most suitable species, different system setups and best practices? Develop a budget, explore markets and trends, analyze benefits and obstacles in this business.

10-090-126 SPRING 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: 10-090-115, 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.

10-090-127 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: 10-090-115, 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.

10-101-190 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.

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 technical 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 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 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 instrument/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
- 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

Curriculum

The Utilities Engineering Technician Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

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
SEMESTER TOTAL	**18**

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
10-605-159 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	**68**

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, 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.

10-606-113 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 characteristics, 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. (Prerequisite: 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. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: 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 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, 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 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.

Curriculum

The Vineyard Management (Viticulture) Associate Degree program is a two-year, four-semester program. Upon graduation, a student will have earned 63 credits.

FIRST SEMESTER

		CREDITS
10-090-111	Sustainable Ag: Issues & Pract	2
10-145-189	Writing a Business Plan-Sm Bus	3
10-196-191	Supervision	3
10-320-101	VIN111-Intro to Viticulture	3
10-320-122	VIN112-Botanical Viticulture	4
SEMESTER TOTAL		15

SECOND SEMESTER

10-090-102	Org Soils, Nutrients, Comp	1
10-320-102	VIN113-Winter Viticulture Tech	2
10-320-103	VIN114-Spring Viticulture Tech	2
10-320-106	VIN211-Integrated Pest Mgmt	2
10-804-107	College Mathematics	3
10-806-112	Principles of Sustainability	3
	Elective	2
SEMESTER TOTAL		15

THIRD SEMESTER

10-145-188	Entrepreneurial Service Mgmt	3
OR		
10-145-185	Organizing Your Small Business	3
OR		
10-145-186	Financial Management-Small Bus	3
OR		
10-145-187	Marketing Your Small Business	3
10-320-104	VIN115-Sum/Fall Vit Tech	2
10-320-107	VIN213-Midwest Vineyard Mgmt	3
10-801-136	English Composition 1	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-320-105	VIN190-Vineyard Safety	1
10-320-108	VIN293-Soils for Viticulture	3
10-320-121	Organic Gardening	2
10-320-134	Sustainable Ag & Food Business	3
10-801-196	Oral/Interpersonal Comm	3
10-809-199	Psychology Of Human Relations	3
	Elective	2
SEMESTER TOTAL		17
TOTAL CREDITS		63

CURRICULUM NOTE

*These courses must be taken at NWTC to receive an Associate Degree.

SUGGESTED ELECTIVES

• Any courses from the Winemaking (Enology) program
• Organic Specialty Crops & Animals, 10-090-106

• 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.

10-090-102 ORGANIC SOILS, NUTRIENTS, COMPOSTING ...functional soil is the foundation of organic systems. Builds robust healthy soil through organic matter, micro-organisms, and nutrient cycling. Explore composting techniques, organic fertilizer sources, soil fertility testing, balancing.

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.

10-090-121 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.

10-145-186 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.

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)

10-320-103 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: IVIN 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 190 VINEYARD SAFETY ...learn safety procedures specific to grape growing including a general history of agricultural safety and health issues, ergonomics, OSHA safety rules and safety issues and concerns.

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 MIDWEST 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 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.
- 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 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
individualization 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 the program will have
the potential for employment as a:

Curriculum

The Web Application Programming
Technician technical diploma is a one-year,
three semester program. Upon graduation,
a student will have completed 30 credits.

FIRST SEMESTER		CREDITS
10-152-185	Website Coding	3
10-154-125	IT: Web: Database Development	3
SEMESTER TOTAL		6

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		30

- 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

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
or 10-154-161, Database Theory)

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.

• As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Reading Comprehesion: 55; Sentence Skills: 75; 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 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

Some positions may require additional education and/or work experience.

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

• 901352, Web Design

Curriculum

The Web Design Technician technical diploma is a one-year, three-semester program. Upon graduation, a student will have completed 29 credits.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
10-152-185	Website Coding	3
10-804-133	Math & Logic	3
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
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		12

THIRD SEMESTER		
10-102-100	Bus and Info Tech Occup Prep	1
10-135-151	Website Design	3
10-135-155	Content Management Systems	3
SEMESTER TOTAL		7
TOTAL CREDITS		29

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. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

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)

10-135-155 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.
- 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, 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 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 Certificate

Curriculum
The Web Development Associate degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

FIRST SEMESTER		CREDITS
10-111-101	Macintosh-Image Editing	3
10-111-103	Macintosh-Intro	1
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
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	Content Management Systems	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

- 901352, Web Design Certificate
- 311522, Web Design Technician Technical Diploma
- 311523, Web Application Programming Technician Technical Diploma

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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.

10-102-100 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. (Corequisite: 10-111-103, Macintosh-Intro)

10-111-103 MACINTOSH-INTRO ...explore the Macintosh Operating System and applications including iPhoto, iTunes, iMovie, GarageBand, FontBook, Sherlock, iCal, AddressBook and Dashboard. Learn to navigate the Mac Operating System and manage files and folders.

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)

10-135-155 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)

10-135-185 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)

10-135-197 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)

10-152-184 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 or 10-154-161, Database Theory)

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.

Welding   Program Code 314421 | 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
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 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.

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.

Curriculum
The Welding Technical Diploma is a one-year, two-semester program. Upon graduation, students will have completed 35 credits.

FIRST SEMESTER		CREDITS
10-804-101	Math 1-Trades	2
31-421-334	Blueprint Reading I	2
31-442-301	Welding-Cutting/Visual	1
31-442-316	Welding-Shielded Metal Arc	5
31-442-317	Welding-Gas Metal Arc	5
31-442-335	Metal Fabrication I	3
SEMESTER TOTAL		18

SECOND SEMESTER		
31-421-333	Blueprint Reading II	2
31-422-310	Metallurgy	2
31-442-321	Welding-Gas Tungsten Arc	5
31-442-327	Welding-Flux Core	5
31-442-334	Metal Fabrication II	2
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		17
TOTAL CREDITS		35

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.

31-421-333 BLUEPRINT READING II ...develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings. (Prerequisites: Accepted into Welding or Marine Construction program; 31-421-331, Blueprint Reading 1)

31-421-334 BLUEPRINT READING I ...orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, welding symbols, weld joint nomenclature, welding joint geometry, metric conversion and interpretation of fabrications from prints. (Prerequisite: Accepted into Welding or Marine Construction program)

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 WELDING-CUTTING/VISUAL ...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.)

31-442-316 WELDING-SHIELDED METAL ARC ...safety, SMAW equipment, materials, accessories, inspection, weld types, joints, and position. (Prerequisite: Accepted into Welding program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-317 WELDING-GAS METAL ARC (GMAW) ...welding safety, GMAW equipment/set up, joint details and distortion control, GMAW weld faults, welding metallurgy, and weld symbol interpretation. (Prerequisite: Accepted into Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-321 WELDING-GAS TUNGSTEN ARC ...perform gas tungsten arc welding (GTAW) in all positions, on plain carbon steel, aluminum, and 3XX stainless steel. (Prerequisite: Accepted into the Welding or Marine Construction program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-327 WELDING-FLUX CORE... safety, equipment, accessories, inspection and repairs, weld types and joint nomenclature, surface welds and all position fillet and groove welds. (Prerequisite: Accepted into Welding program; Corequisite: 31-442-301, Welding-Cutting/Visual)

31-442-334 METAL FABRICATION II ...advanced metal fabrication tools developing assembly and sub-assemblies from working prints using various fabrication processes. Additionally, rigging and lifting, distortion control, and basic CNC programming will be incorporated. (Prerequisites: Accepted into the Welding OR Marine Construction program; 31-442-335, Metal Fabrication 1)

31-442-335 METAL FABRICATION I ...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: Accepted into the Welding or Marine Construction program; Corequisite: 10-804-101, Math 1-Trades)

Wellness & Health Promotion
Program Code 105461 | 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 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.

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. 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 or waitlist status will be granted. To learn more about these assessments and program benchmark scores, please contact a counselor 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
The Wellness and Health Promotion Associate of Applied Science Degree is a two-year, four-semester program. Upon graduation, a student will have completed 61 credits.

FIRST SEMESTER		CREDITS
*10-546-101	Personal Wellness & Fitness	3
*10-546-102	Chronic Diseases/Health Issues	3
10-801-136	English Composition I	3
++10-806-177	Gen Anatomy & Physiology	4
10-809-198	Intro to Psychology	3
SEMESTER TOTAL		16

SECOND SEMESTER		
*10-546-103	Health & Nutrition	3
*10-546-104	Intro to Wellness Coaching	3
*10-546-105	Wellness Kinesiology	4
*10-546-106	Wellness Programming/Design	3
10-801-196	Oral/Interpersonal Comm	3
SEMESTER TOTAL		16

THIRD SEMESTER		
*10-546-107	Stress Management Techniques	2
*10-546-108	Wellness Practicum I	3
*10-546-109	Exercise Physiology	3
AND		
*10-546-110	Exercise/Performance Nutrition	3
OR		
*10-546-111	Coaching & Interviewing Tech	3
AND		
*10-546-112	Wellness Coaching Psychology	3
10-804-123	Math w Business Apps	3
SEMESTER TOTAL		14

FOURTH SEMESTER		
*10-546-113	Wellness Marketing/Technology	3
*10-546-114	Wellness Practicum II	3
*10-546-115	Exercise Testing/Prescription	3
OR		
*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		61

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.

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.

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.

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 and their signs and symptoms. (Prerequisite: 10-806-177, General Anatomy & Physiology)

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.

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)

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.
• NWTC will offer live courses on our campus, exceptions: courses noted with (*) are LTC Broadcast Captioning to NWTC-GB and courses noted (**) are only offered at LTC.

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. Upon graduation, a student will have completed 70 credits.

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
**10-482-001	Wind Technician 1 Lab	1
**10-482-002	Wind Technician 2	1
**10-482-003	Wind Technician 3	1
SEMESTER TOTAL		5

THIRD SEMESTER

10-103-131	Micro: Excel-Intro	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
10-664-103	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

**10-482-004	Wind Technician 4	3
**10-482-005	Wind Technician 5	2
**10-482-006	Wind Site Assessment	1
**10-482-007	Wind (Small) Turbine Maint	1
SEMESTER TOTAL		7
TOTAL CREDITS		70

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.

10-449-113 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.

10-482-001 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.

10-482-002 WIND TECHNICIAN 2 ...will give the learner ENSA certification in safe access, rescue and confined spaces. The learner will review 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.

10-482-003 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.

10-482-004 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.

10-482-005 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.

10-482-006 WIND SITE ASSESSMENT ...reviews the basics of site assessment covered in Intro to Wind, but adds more details and techniques on doing a thorough site assessment that is the same quality standard used by the MREA and Focus on Energy*. Similar site assessment requirements are found throughout the United States for those who want to use grant money to install a wind energy system. This course prepares the learner to become a certified site assessor.

10-482-007 WIND (SMALL) TURBINE MAINTENANCE ...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. Some work will be done on campus; other turbines are located off site. Travel is required.

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.

10-620-100 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.

10-620-159 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.

10-620-165 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. (Prerequisite: 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. Reduction 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 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. (Prerequisites: 10-660-110, Electronics 1: Diodes Basic; 10-664-102, Automation 3: 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)

Winemaking (Enology) Program Code 103202 | 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 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 master 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: Reading Comprehension: 55; Arithmetic: 34; Sentence Skills: 60. Equivalent assessment scores are acceptable. 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 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.
• 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.

Curriculum
The Winemaking (Enology) Associate Degree program is a two-year, four-semester program. Upon graduation, a student will have earned 60 credits.

FIRST SEMESTER		CREDITS
10-145-189	Writing a Business Plan-Sm Bus	3
10-320-109	VIN146-Intro to Enology	3
OR		
10-320-146	Intro to Enology	3
10-801-198	Speech	3
10-804-118	Interm Algebra w Apps	4
10-806-134	General Chemistry	4
SEMESTER TOTAL		17

SECOND SEMESTER		
10-320-110	VIN148-Winery Sanitation	3
10-320-111	VIN160-Winery Equip Operation	2
10-320-113	VIN246-Intermediate Enology	3
10-320-118	VIN290-Winery Safety	2
10-801-136	English Composition 1	3
SEMESTER TOTAL		13

THIRD SEMESTER		
10-065-141	Microbiology-Wine	4
10-145-188	Entrepreneurial Service Mgmt	3
OR		
10-145-185	Organizing Your Small Business	3
OR		
10-145-186	Financial Management-Small Bus	3
OR		
10-145-187	Marketing Your Small Business	3
10-320-114	VIN257-Fall Wine Prod Intern	3
10-320-116	VIN268-Wine/Must Analysis	3
10-809-199	Psychology Of Human Relations	3
SEMESTER TOTAL		16

FOURTH SEMESTER		
10-320-115	VIN259-Cellar Ops Technology	2
10-320-117	VIN266-Sensory Evaluation	3
10-809-172	Intro to Diversity Studies	3
10-809-195	Economics	3
10-999-923	Elective	3
SEMESTER TOTAL		14
TOTAL CREDITS		60

CURRICULUM NOTE
*These courses must be taken at NWTC to receive an Associate Degree.

SUGGESTED ELECTIVES
• Marketing for the Small Winery, VIN 270
• Winery Tasting Room Management, VIN 272
• Wines of the World, VIN 274
• Winery Safety, VIN 290
• Organic Hort/Fruits, Vegs, Herbs, 10-090-105
• Beverage Server-Responsible, 47-311-400
(this course will not meet the requirements of the degree, but may be of interest to some students).

• 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.

10-065-141 MICROBIOLOGY-WINE Ö basic principles of wine microbiology. Students will become familiar with the identification, physiology, morphology, and biochemistry of wine organisms to understand their influence on winemaking and the importance of quality assurance controls in the laboratory as well as regulatory requirements of the wine industry. (Prerequisite: 10-806-134, General Chemistry)

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.

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 VIN146 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 VIN146 or permission)

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; 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. (Prequisites: VIN146, Intro to Enology; CHM105, 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.

10-320-146 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.)

Wood Tech
Program Code 314102 | 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
Wood Tech prepares students to enter the building construction trades as carpenters and cabinetmakers.

Program Outcomes
- Use materials according to application.
- Adhere to safety standards.
- Use industry terminology.
- Use measuring systems in the industry.
- Visualize final products from blueprints.
- Estimate labor and material costs.
- Erect building and cabinet modules.
- Apply wood finishing.

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: 34; 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 (920) 498-5444 or (888) 385-6982.

Employment Potential
Carpenter/Cabinetmaker: builds cabinets; is capable in layout, frame, fabrication, assembly, and finish preparation; applies laminated plastic; and installs drawers and door hardware.

Carpenter/Finish: applies interior wall covering and paneling, hangs doors, applies trim, and installs and adjusts cabinets and built-in furniture.

Carpenter/General Builder: works 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 and cabinetry.

Carpenter/Millworker: works in a factory setting; mass produces trim, cabinets, and furniture; custom planes and saws; and handles other operations that demand the use of large and specialized machinery.

Carpenter/Rough: erects forms for concrete foundations, rough framing, and roofing for residential and commercial construction; erects scaffolding; installs sheathing, siding, and prepares site for jobs.

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

Curriculum
The Wood Tech Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 33 credits.

FIRST SEMESTER		CREDITS
10-804-101	Math 1-Trades	2
31-403-360	Blueprint Rdg-Cabinetry	2
31-409-310	Commercial Cabinet Finishes	1
31-409-321	Wood Techniques-Cabinetry 1	5
31-409-322	Wood Techniques-Cabinetry 2	5
SEMESTER TOTAL		15

SECOND SEMESTER		
31-403-350	Blueprint Rdg-Construction	2
31-410-301	Wood Tech-Bldg Matl Est	2
31-410-311	Wood Techniques-Carpentry 1	5
31-410-312	Wood Techniques-Carpentry 2	5
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
31-806-354	Science-Wood Tech	2
SEMESTER TOTAL		18
TOTAL CREDITS		33

CURRICULUM NOTE
*Math 1-Trades (10-804-101) must be taken during the student's first semester at NWTC.

- Contractor
- Carpenter Apprentice
- Carpenter Journeyperson
- Mill Supervisor
- Journeylevel Cabinet Maker
- Construction Retail Materials Sales
- Construction Wholesale Material Sales
- Specialty Products Sales for Roofing, Trusses, Windows & Doors
- Estimating Technician
- Commercial Finisher
- Expediter

COURSE DESCRIPTIONS

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

31-403-350 BLUEPRINT READING CONSTRUCTION ...drawing development/equipment, blueprints, plot and building layout, scaling and dimensioning practices, symbols, notations, basement/floor elevations, detail/sectional drawings, residential/industrial print reading, and schedules and specifications.

31-403-360 BLUEPRINT READING-CABINETRY ...sectional detail, cabinet layout, blueprint reading, angle layout, and countertop layout.

31-409-310 COMMERCIAL CABINET FINISHES ...personal protection and safety, abrasives, finishing materials, spray equipment, spray applications and troubleshooting.

31-409-321 WOOD TECHNIQUES-CABINETRY 1 ...size and cut frame members for doweling, mortise and tenon, pocket drilling, calculate panel sizes and supports, assemble cabinet both upper & lower. (Corequisite: 10-804-101, Math 1-Trades)

31-409-322 WOOD TECHNIQUES-CABINETRY 2 ...identify by and butt unit both upper and lower, size stiles rails panels, setup and cut dovetail joints, size cut and assemble drawer, cut and apply plastic. (Corequisites: 31-409-321, Wood Techniques-Cabinetry 1; 10-804-101, Math 1-Trades)

31-410-301 WOOD TECHNICS-BUILDING MATERIAL ESTIMATES ...perform material and labor cost estimates of building foundations, floor systems, superstructures, and exterior and interior finish systems.

31-410-311 WOOD TECHNIQUES-CARPENTRY 1 ...basics of tool and equipment safety, materials common to residential construction and proper application, framing theory of floor, wall, and roof systems. (Corequisite: 10-804-101, Math 1-Trades)

31-410-312 WOOD TECHNIQUES-CARPENTRY 2 ...theory and practice of roof and stair calculations and construction, as well as exterior finish systems and door and window installation. (Corequisite: 31-410-311, Wood Techniques-Carpentry 1)

Occupational Support and General Education

Course Descriptions
Occupational Support

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. 1 cr.

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. 1 cr.

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. 1 cr.

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. 1 cr.

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. 3 cr.

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. 3 cr.

10-150-181 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) 2 cr.

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. 3 cr.

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. 3 cr.

30-428-337 POWER HOUSE-ECONOMICS ...guides students in combining newly learned engineering and financial principles with available reference material to determine basic powerhouse economics. 1 cr.

32-442-352 WELDING-METAL WORKING PROCESSES ...welding and machine shop safety, blueprint reading, basic arc and oxyacetylene welding techniques, precision measuring tools, layout, use of hand tools, band saw, drillpress, lathe, milling machine. 2 cr.

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. 4 cr.

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. 3 cr.

10-501-104 HEALTHCARE CUSTOMER SERV...is designed as an introduction to customer service for learners interested in working in various healthcare settings. The learner investigates healthcare systems, safety standards, and the workforce. The learner examines professionalism, interpersonal and written communication skills, and confidentiality as they relate to customer service in healthcare. 1 cr.

10-501-107 INTRODUCTION TO HEALTH CARE COMPUTING...provides an introduction to basic computer functions and applications utilized in contemporary healthcare settings. Students are introduced to the hardware and software components of modern computer systems. 2 cr.

31-501-301 LEARNING STRATEGIES FOR HEALTH CARE...enhances the student's ability to: manage study time using a personal calendar; organize coursework, reading and assessment projects; apply reading skills and strategies for health care classes; utilize vocabulary related to health care terminology; demonstrate writing skills and strategies for medical and clinical settings; perform mathematical skills and strategies required in health care work places; and utilize study strategies successfully. 1 cr.

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) 3 cr.

31-509-307 MEDICAL OFFICE INSURANCE & FINANCE ...introduces medical assitant 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) 2 cr.

31-512-326 ST: INFECTION CONTROL...covers the structure, general classification, reproduction and transmission of microorganisms. Emphasis will be placed on the practice of sterile technique and its impact on infection control in the health care setting. 2 cr.

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. (Prerequisite: 10-664-163, Control 4: Drive Performance) 1 cr.

General Education Communication

10-801-136 ENGLISH COMPOSITION 1 ...learners develop knowledge/skills in planning, organizing, writing, editing. Students will also analyze audience/purpose, use elements of research, format documents using standard guidelines, and develop critical reading skills. (Prerequisite: Accuplacer-Sentence Skills <75 AND Accuplacer-Reading <55 OR ACT-English <16 AND ACT Reading <18 OR 77-855-799 OR 10-831-103, Intro to College Writing with "C" or better OR equivalent) 3 cr.

10-801-195 WRITTEN COMMUNICATION ...the nature and scope of academic and business writing. Develops writing skills which include pre-writing, drafting, revising, and editing. A variety of writing assignments are designed to help the learner analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and context. Also develops critical reading and thinking skills through the analysis of a variety of written documents. (Prerequisite: Accepted in the UW-Oshkosh General Studies Transfer Certificate; Accuplacer-Sentence Skills =75 AND Accuplacer-Reading =55 OR ACT-Reading =18 OR 77-851-759 BE Communication Prep IIB OR 10-831-103, Intro to College Writing with "C" or better OR equivalent) 3 cr.

10-801-196 ORAL/INTERPERSONAL COMMUNICATION ...the communication process, perception and self-concept, language, listening, nonverbal communication, interpersonal relationships, communication in groups and public communication; prepare and deliver an oral presentation. (Prerequisite: Accuplacer-Reading =55 OR ACT- Reading =15 OR 77-858-759, BE Reading Prep IIB with "C" or better OR equivalent) 3 cr.

10-801-197 TECHNICAL REPORTING ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 10-801-136, English Composition I OR 10-801-195, Written Communication with "C" or better) 3 cr.

10-801-198 SPEECH ...fundamentals of effective oral presentation to small and large groups: topic selection, audience analysis, methods of organization, research, structuring evidence and support, delivery techniques, and the listening process. (Prerequisite: Accuplacer-Reading =55 OR ACT- Reading =15 OR 77-858-759, BE Reading Prep IIB with "C" or better OR equivalent) 3 cr.

31-801-385 COMMUNICATING-WRITING ...writing techniques, memos, letters, descriptions, instructions, and the job-seeking process. (Prerequisite: Accuplacer-Sentence Skills =60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759, BE Communication Prep IIB with "C" or better OR equivalent) 1 cr.

31-801-386 COMMUNICATING EFFECTIVELY ...interpersonal communication, including the function of interpersonal communication, listening techniques, perception, non-verbal communication, language, self-concept, conflict resolution and customer service. (Prerequisite: Accuplacer-Sentence Skills =60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759, BE Communication Prep IIB with "C" or better OR equivalent) 1 cr.

Mathematics

10-804-101 MATH 1-TRADES ...provides the opportunity for the learner to develop the knowledge skills process and understanding of whole numbers, fractions, decimals, measurement, trigonometry, integers, algebraic equations, word problems, and practical plane geometry. (Prerequisite: Accuplacer-Arithmetic score =34 OR ACT-Math score = 13 OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 2 cr.

10-804-104 MATH 2-TRADES ...provides the opportunity for the learner to develop the knowledge skills process and understanding of solving equations, ratio, proportion, percents, practical plane geometry, solid figures, trigonometry, and statistics. (Prerequisite: Accuplacer-Arithmetic = 65 OR ACT-Math =13 OR 10-834-109, PreAlgebra OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent)

10-804-107 COLLEGE MATHEMATICS ...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. (Prerequisite: Accuplacer-Arithmetic=65 OR ACT-Math=15 OR 10-834-109, PreAlgebra OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 3 cr.

10-804-118 INTERM ALGEBRA WITH APPLICATIONS ...algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. (Prerequisite: Accuplacer-Algebra=61 OR ACT-Math 21 OR 10-804-107, College Mathematics OR 10-834-110, Elem Alg w/ Apps OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 4 cr.

10-804-123 MATH W BUSINESS APPS ...real numbers; basic operations; proportion/ratio variable; percents, simple/ compound interest; annuity; apply math concepts to purchasing/buying process, selling process; and basic statistics with business/consumer applications. (Prerequisite: Accuplacer-Arithmetic=65 OR ACT-Math=15 OR 10-834-109, PreAlgebra OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 3 cr.

10-804-133 MATH & LOGIC ...students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases. (Prerequisite: Accuplacer-Algebra=61 OR ACT-Math 21 OR 10-834-110, Elem Alg w/ Apps OR OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 3 cr.

10-804-195 COLLEGE ALGEBRA WITH APPLICATIONS ...skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatorics, and the binomial theorem. (Prerequisite: Accuplacer-CM=63 OR ACT-Math 24 OR 10-804-118, Intermediate Alg w/ Apps with "C" or better OR equivalent) 3 cr.

10-804-196 TRIGONOMETRY WITH APPLICATIONS ...topics include circular functions, graphing of trigonometry functions, identities, equations, trigonometric functions of angles, inverse functions, solutions of triangles complex numbers, DeMoivre's Theorem, polar coordinates, and vectors. (Prerequisite: Accuplacer-CM=63 OR 10-834-118, Intermediate Alg w/ Apps with "C" or better OR equivalent) 3 cr.

10-804-197 COLLEGE ALGEBRA & TRIGONOMETRY WITH APPLICATIONS Those skills needed for success in Calculus and many application areas on a baccalaureate level. Topics include the real and complex number systems, polynomials, exponents, radicals, solving equations and inequalities (linear and nonlinear), relations and functions, systems of equations and inequalities (linear and nonlinear), matrices, graphing, conic sections, sequences and series, combinatorics, and the binomial theorem. (Prerequisite: Accuplacer-CM=63 OR ACT-Math 24 OR 10-804-118, Intermediate Alg w/ Apps with "C" or better OR equivalent) 5 cr.

10-804-198 CALCULUS 1 ...analyze and graph algebraic expressions, especially conic sections. Develop an intuitive understanding of limits, derivatives and integrals. Apply the derivative and the integral to certain physical problems. (Prerequisite: ACT-Math 28 OR 10-804-195, College Algebra with Apps AND 10-804-196, Trigonometry with Apps with "C" or better OR 10-804-197, College Algebra & Trig w/ Apps with "C" or better) 4 cr.

31-804-312 MATH-ALGEBRA/ TRADES ...signed numbers, order of operations, scientific notation, metric units/ measurement, calculator operations, algebra, introductory trigonometry, Pythagorean theorem, solving right triangles. (Prerequisite: Accuplacer-Arithmetic=65 OR ACT- Math=15 OR 10-834-109, PreAlgebra OR 77-854-759, BE Math Prep IIB with "C" or better OR equivalent) 1 cr.

Natural Science

10-806-112 PRINCIPLES OF SUSTAINABILITY ...prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S. and analyze approaches used by your community to promote and implement sustainability. (Prerequisite: Accuplacer-Reading=55 OR ACT-Reading =15 OR 77-858-759, BE Reading Prep IIB OR equivalent) 3 cr.

10-806-134 GENERAL CHEMISTRY ...covers chemistry fundamentals. Topics: metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws. (Prerequisite: Accuplacer-Reading=55 OR ACT- Reading =15 OR 77-858-759, BE Reading Prep IIB OR equivalent) 4 cr.

10-806-143 COLLEGE PHYSICS 1 ...presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversions and analysis, kinematics, dynamics, work, energy, power, temperature, and heat. (Prerequisite: Accuplacer-Reading = 80 OR ACT-Reading = 17 OR 77-858-759, Reading Prep , OR 10-836-002, Prep for Physical Sciences w "C" or better) 4 cr.

10-806-154 GENERAL PHYSICS 1 ...application/theory of basic physics principles: problem-solving, laboratory investigation, and applications including unit conversion and analysis, vectors, translational and rotational kinematics/dynamics, heat/ temperature, and harmonic motion and waves. (Prerequisite: Accuplacer-Reading = 80 OR ACT-Reading = 17 OR 77-858-759, Reading Prep , OR 10-836-002, Prep for Physical Sciences w "C" or better) 4 cr.

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 77-858-759, Reading Prep , OR 10-836-001, Prep for Anatomy & Physiology AND lab-based chemistry w "C" or better. Health Sciences programs may require a higher grade; refer to your plan for details.) 4 cr.

10-806-179 ADVANCED ANATOMY & PHYSIOLOGY ...normal human anatomy and physiology are studied using a body-systems approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. (Prerequisite: 10-806-177, Gen Anatomy & Physiology, with a "C" or better. Health programs may require a higher grade; refer to your plan for details.) 4 cr.

10-806-186 INTRODUCTION TO BIOCHEMISTRY ...covers organic and biological chemistry necessary for application within Nursing and other Allied Health careers. Emphasis is placed on recognizing the structure, physical properties and chemical reactions of organic molecules, body fluids and acids. Discussion of biological functions and their relationship to enzymes, proteins, lipids, carbohydrates and DNA. (Prerequisite: Accuplacer-Reading = 80 OR ACT-Reading = 17 OR 77-858-759, Reading Prep , OR 10-836-001, Prep for Anatomy & Physiology AND lab-based chemistry w "C" or better. Health Sciences programs may require a higher grade; refer to your plan for details.) 4 cr.

10-806-189 BASIC ANATOMY ...examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems. (Prerequisite: Accuplacer-Reading=55 OR ACT-Reading =15 OR 77-858-759, BE Reading Prep IIB OR equivalent) 3 cr.

10-806-197 MICROBIOLOGY ...history, morphology, physiology, nutritional growth requirements, metabolism, methods of identification. Focus on disease-causing microorganisms, appropriate prevention, treatment, control mechanisms. Specific/ non-specific host defense mechanisms, applications of immunology examined. (Prerequisite: 10-806-177, Gen Anatomy & Physiology, with a "C" or better. Health programs may require a higher grade; refer to your plan for details.) 4 cr.

10-806-286 NWTC CALCULUS BASED PHYSICS 1 ...students will develop a conceptual understanding of physics. They explore the theoretical and experimental treatment of mechanics, material properties, fluids, heat, sound, and wave motion. Critical thinking and sound problem solving skills at stressed throughout the course. (Prerequisite: 10-804-198 Calculus 1) 5 cr.

31-806-312 ANATOMY/STRUCTURE-FUNCTION ...human body systems, structural formation. (Prerequisite: Accuplacer-Reading=55 OR ACT- Reading =15 OR 77-858-759, BE Reading Prep IIB OR equivalent) 2 cr.

31-806-354 SCIENCE-WOOD TECHNICS ...measurement systems, problem solving methods, properties of matter, forces, energy, work, power, simple machines, pressure, heat, electricity, and sound. (Prerequisite: Accuplacer-Reading=55 OR ACT-Reading =15 OR 77-858-759, BE Reading Prep IIB OR equivalent) 1 cr.

Social Science

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 77-851-759 BE Communication Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-115 GLOBAL CULTURAL AWARENESS 1 ...discuss the factors that influence people to speak, act, negotiate, and make decisions in an effort to modify personal assumptions and habits that hinder success in the workplace. Explore how styles of thinking, value systems, and political and social realities affect relationships. Focus on negotiations, international communications, marketing, and hosting international visitors. 3 cr.

10-809-116 GLOBAL CULTURAL AWARENESS 2 ...continuation of Global Cultural Awareness 1; discuss the factors that influence people to speak, act, negotiate, and make decisions in an effort to modify personal assumptions and habits that hinder success in the workplace. Explore how styles of thinking, value systems, and political and social realities affect relationships. Focus on negotiations, international communications, marketing, and hosting international visitors. 3 cr.

10-809-122 INTRO TO AMER GOVERNMENT ...introduces American political processes and institutions: focusing on rights/responsibilities of citizens and the process of participatory democracy; Examines separation of powers and checks/ balances & the roles of different groups. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-144 MACROECONOMICS ...introduces the learner to basic social choices regarding economic systems, basic economic aggregates, fiscal policy, the banking system, monetary policy, and international trade. Balance is drawn between theory, analysis and a critique of the institutions that characterize modern mixed-capitalist economies. Conflicting social goals, economic constraints, and environmental concerns provide the framework through which the macroeconomy is analyzed. 3 cr.

10-809-159 ABNORMAL PSYCHOLOGY ...surveys features, causes, assessment and treatment of abnormal behavior through major theoretical perspectives. Introduces the diagnosis system of the DSM-IV, the history, cultural/social differences, current perspectives, diagnosis criteria/treatments. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-166 INTRO TO ETHICS: THEORY & APP ...basic understanding of theoretical foundations of ethical thought; analyze/compare relevant issues using diverse ethical perspectives; critically evaluate individual, social/professional standards of behavior--applying a systematic decision-making process. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-172 INTRO TO DIVERSITY STUDIES ...basic American values of justice and equality by teaching vocabulary, history of immigration/conquest, intercultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ ADA. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-188 DEVELOPMENTAL PSYCHOLOGY ...defines human development; examines theories; heredity and environmental effects; prenatal development and birth; evaluates historical, cognitive psychosocial development through the life span; aging, death, and dying. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-196 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration and change; collective behavior: politics, economics, religion, education, and the effects of technology. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-197 CONTEMPORARY AMER SOCIETY...the major social institutions within the American society: government, family, education, religion, and economic system. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

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 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.

10-809-199 PSYCHOLOGY OF HUMAN RELATIONS ...decision making, motivation, conflict resolution, learning strategies, growth, and adjustment, diversity, psychological theories, relationships, psychological disorders, stress, career analysis, social psychology, and lifespan development. (Prerequisite: Accuplacer-Sentence Skills= 60 AND Accuplacer-Reading =55 OR ACT-English =16 AND ACT Reading =15 OR 77-851-759 BE Communication Prep IIB OR 77-858-759 BE Reading Prep IIB w/ a "C" or better or equivalent) 3 cr.