

Accounting

Program Code 101011

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.
Offered part-time at the Marinette campus.

PROGRAM DESCRIPTION

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

Graduates of this program will be able to:

- 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.
- Perform activity-based costing.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math (algebra recommended)
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Accounts Payable/Receivable Accountant, Payroll Accountant, Inventory Control Accountant, Cost Accountant, Public Accountant, Accountant, Tax Accountant, and Governmental/Nonprofit Accountant.

ACCOUNTS PAYABLE/RECEIVABLE

ACCOUNTANT: records and pays bills of the company, records receivables transactions, bills customers at regular intervals, records charges and payments.

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

INVENTORY CONTROL ACCOUNTANT:

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

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

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

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

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

GOVERNMENTAL/NONPROFIT

ACCOUNTANT: keeps records of governmental/nonprofit agencies using the fund method of accounting.

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

- Auditor
- Certified Public Accountant
- Comptroller
- Treasurer
- Trust Officer

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-101-110	Accounting 1	4
10-102-101	Financial Applications	3
10-103-103	Micro Basics MS Office 1	3
10-801-195	Communication-Written	3
10-804-101	Math-Business	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-101-105	Accounting-Computer Ledger	2
10-101-120	Accounting 2	4
10-101-151	Accounting-Payroll	3
10-102-150	Law-Business	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel	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
10-104-108	Credit Procedures	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-101-142	Accounting-Managerial	3
10-101-143	Accounting-Govern/Nonprofit	2
10-101-156	Accounting-Auto Appl	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: Micro Basics MS Office 2 (10-103-109), Financial Management-Medical (10-101-145), Financial Statement Analysis (10-102-172)

This program is fully eligible for financial aid.

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, receivables, and temporary investments, inventories, fixed assets, payroll, notes payable, current liabilities, sole proprietorships, and partnerships.

10-101-120 ACCOUNTING 2 ...concepts and principles covering corporations, capital stocks, dividends, bonds, amortization of bond premiums, and discounts; manufacturing, job order and process cost systems; variances; managerial application including decision making and financial 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.

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. Requires experience with Windows, and prior completion of an introductory course in Word, and introductory and intermediate courses in Excel. (Prerequisite: 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, auditing, and financial reporting practices and the standards that shape their accounting and financial reporting systems.

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)

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. (Prerequisite: 10-101-110, Accounting 1)

10-101-156 ACCOUNTING-AUTOMATED APPLICATIONS ...Window commands, file management, worksheet applications, database applications, macros, evaluation of accounting software, installation of software, and conversion of manual accounting system to a computerized system. Requires experience with Windows, and prior completion of an introductory course in Word, and introductory and intermediate courses in Excel. (Prerequisite: 10-101-120, Accounting 2)

10-103-103 MICRO BASICS MS OFFICE 1 ...introductory computer software packages and applications, basics of operating a computer, Windows concepts, mouse techniques, word processing using Word, creating spreadsheets and charts using Excel.

Descriptions of courses not found on this page can be found in the back of the catalog.

Accounting Assistant

Program Code 311011

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay and Marinette campuses. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361.

Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Accounting Assistant prepares students to perform bookkeeping functions in business offices.

Accounting Assistants may be responsible for payroll, accounts payable/receivable, purchase orders, inventory control records, or sales records.

Graduates of this program will be able to:

- Manage the general ledger.
- Manage accounts receivable.
- Manage accounts payable.
- Prepare payroll.
- Account for fixed assets.
- Manage cash flow.
- Analyze financial statements.
- Maintain inventory control.
- Create electronic spreadsheets.
- Perform accounting functions using computerized accounting packages.
- Demonstrate proficiency in math using a table top calculator.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Accounts Payable/Receivable Clerk, Billing Clerk, Bookkeeper/Payroll Clerk, Inventory Control Clerk, or Office Assistant.

ACCOUNTS PAYABLE/RECEIVABLE CLERK:

records and pays bills of the company, records receivables transactions, bills customers at regular intervals, and records charges and payments.

BILLING CLERK: prepares vouchers for payment of invoices, checks extensions, deducts discounts, charges payments to proper accounts, and prepares checks in payment of vouchers.

BOOKKEEPER/PAYROLL CLERK: handles the bookkeeping system of a business including payroll, receivables, payables, and end-of-period reports; handles time cards; computes overtime; deducts taxes; prepares payroll checks; and reconciles payroll accounts.

INVENTORY CONTROL CLERK: maintains a perpetual inventory system for the purchasing department, records price changes in product catalogs, schedules material ordering, and charges out material to various departments of the business.

OFFICE ASSISTANT: performs a variety of duties related to bookkeeping, keyboarding applications, filing, record keeping, customer relations, telephoning, and general correspondence.

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

- Accountant
- Bookkeeping Supervisor
- Office Manager

CURRICULUM

The Accounting Assistant Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 32 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-103-103	Micro Basics MS Office 1	3
10-106-106	Keyboard-Skills	2
	OR	
10-106-107	Keyboard-Speed / Accuracy 1	1
	AND	
10-106-112	Keyboard-Speed / Accuracy 2	1
10-106-152	Records Management	2
10-106-153	Professional Profile	3
10-804-101	Math-Business	3
31-101-311	Bookkeeping 1-Applied	3
31-801-387	Grammar-Business Appl	1
	SEMESTER TOTAL	17

SECOND SEMESTER

10-101-105	Accounting-Computer Ledger	2
10-106-113	Keyboard-Speed / Accuracy 3	1
10-809-195	Economics	3
31-101-321	Bookkeeping 2-Applied	3
31-101-361	Accounting-Voc Payroll	2
31-104-350	Retail Credit	2
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
	SEMESTER TOTAL	15

This program is partially eligible for financial aid.

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 and microcomputers using Microsoft Excel such as addition, subtraction, multiplication, division, percent, memory, and business problems. Requires experience with Windows, and prior completion of an introductory course in Word, and introductory and intermediate courses in Excel.

10-103-103 MICRO BASICS MS OFFICE 1

...introductory computer software packages and applications, basics of operating a computer, Windows concepts, mouse techniques, word processing using Word, creating spreadsheets and charts using Excel.

10-106-106 KEYBOARD-SKILLS ...skill

development on the alphabetic keyboard, including top-row number keys, and ten-key pad using analytic/diagnostic software in a structured classroom setting. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 20 WPM.

10-106-107 KEYBOARD-SPEED/ACCURACY 1

...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 35 WPM in a 3-minute timing. Requires ability to touch keyboard at 20 WPM.

10-106-112 KEYBOARD-SPEED/ACCURACY 2

...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 35 WPM.

10-106-113 KEYBOARD-SPEED/ACCURACY 3

...skill development on the alphabetic keyboard pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 45 WPM. Requires ability to touch keyboard at 40 WPM.

10-106-152 RECORDS MANAGEMENT

...organization and management of records departments, equipment; and major systems of classification: alphabetic, numeric, geographic, subject, chronologic, and micro systems.

10-804-101 MATH-BUSINESS ...percentage, interest, promissory notes, borrowing, credit charges, payroll records and deductions, property tax, sales tax, inventory valuation, depreciation, mark-up, cash and trade discounts, stocks and bonds, and financial statement analysis.

31-101-311 BOOKKEEPING 1-APPLIED

...analyzing business transactions; journalizing, posting, and the end-of-period operations; payroll procedures; and subsidiary ledgers and control accounts.

31-101-321 BOOKKEEPING 2-APPLIED

...partnership accounting, internal control of assets, negotiable instruments, valuation of inventory, valuation of fixed assets, departmental procedures, accrual basis of accounting, corporate accounting, branch operations, and voucher system.
(Prerequisite: 31-101-311, Bookkeeping 1-Applied)

31-101-361 ACCOUNTING-VOCATIONAL

PAYROLL ...payroll records, Fair Labor Standards Act, wage computation, federal and state tax, and time-keeping records.

31-104-350 RETAIL CREDIT ...introduction to credit, income tax, consumer credit grantors, budgeting, credit plans, accounts receivables, credit reporting agencies, credit decisions, home purchasing, credit laws, and collections.

Descriptions of courses not found on this page can be found in the back of the catalog.

Administrative Assistant

Program Code 101066

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay and Marinette campuses. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Administrative Assistant prepares students to be efficient and effective office employees through application of office procedures (proofreading, telephone, records management, meeting and travel arrangements, project management, Internet research, etc.) and software skills (word processing, desktop publishing, spreadsheet, presentation graphics, electronic calendaring, and database). All software materials prepare students to sit for the Microsoft Office User Specialist (MOUS) exams.

Graduates of this program will be able to:

- Provide customer service.
- Manage information.
- Maintain financial records.
- Create publications/presentations.
- Maintain equipment.
- Arrange travel.
- Process documents.
- Coordinate meeting activities.
- Process mail.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- A keyboarding skill of 20 wpm using the TOUCH method is recommended.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Administrative Assistant, Legal Administrative Assistant, Medical Administrative Assistant, Office Assistant, Receptionist/Administrative Assistant, Transcriptionist, or Word Processor.

ADMINISTRATIVE ASSISTANT: schedules appointments; communicates effectively in person, on the phone, and in writing; transcribes dictation from notes or machines; prepares agendas; takes minutes; arranges itineraries; schedules travel plans; handles mail; uses word processing, spreadsheet, presentation graphics, and/or database software; and possibly supervises others.

LEGAL ADMINISTRATIVE ASSISTANT: performs all duties of an administrative assistant in a legal office specializing in legal formats, terminology, and procedures.

MEDICAL ADMINISTRATIVE ASSISTANT: performs all duties of an administrative assistant in a medical facility specializing in medical procedures and terminology.

OFFICE ASSISTANT: types, files, transcribes, does word processing, works with the telephone, makes appointments, keeps records, sets up meetings, and handles customer relations.

RECEPTIONIST/ADMINISTRATIVE ASSISTANT: receives and routes telephone calls, greets visitors, handles filing, mail, photocopying, and faxing; may provide administrative support at various levels within the organization.

TRANSCRIPTIONIST: uses transcribing machines and word processing equipment, proofreads, and verifies documents.

WORD PROCESSOR: works in a specialized department of a company producing all forms of documents for the firm; edits, revises, proofreads; and types with speed and accuracy using word processing software.

With additional education and/or work experience, a graduate may find employment in a variety of specialties.

- Certified Professional Secretary (CPS)
- Executive Assistant/Secretary
- Office Manager
- Records Analyst
- Instructor/Trainer
- Event Coordinator
- Team Leader

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-103-151	Micro: PowerPoint-Intro	1
10-106-103	Info Process Principles	3
10-106-106	Keyboard-Skills	2
OR		
10-106-107	Keyboard-Speed/Accuracy 1	1
AND		
10-106-112	Keyboard-Speed/Accuracy 2	1
10-106-131	Transcription Fund 1	3
10-106-138	Software Skills 1	3
OR		
10-103-111	Micro: Windows-Introduction	1
AND		
10-103-121	Micro: Word-Introduction	1
AND		
10-103-122	Micro: Word-Part 2	1
10-106-153	Professional Profile	3
10-804-101	Math-Business	3
SEMESTER TOTAL		18

SECOND SEMESTER

10-103-160	Micro: Outlook	1
10-106-113	Keyboard-Speed/Accuracy 3	1
10-106-126	Admin Office Procedures 1	2
10-106-132	Transcription Fund 2	2
10-106-139	Software Skills 2	2
OR		
10-103-131	Micro: Excel-Introduction	1
AND		
10-103-132	Micro: Excel-Part 2	1
10-106-142	Software Projects	3
10-106-152	Records Management	2
10-106-172	Telephone Skills	1
10-801-195	Communication-Written	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-101-101	Accounting Principles	3
10-106-136	Admin Office Procedures 2	3
10-106-140	Software Skills 3	3
OR		
10-103-123	Micro: Word-Part 3	1
AND		
10-103-141	Micro: Access-Intro	1
AND		
10-103-142	Micro: Access-Part 2	1
10-809-197	Society-Amer Contemp	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-106-144	Administrative Asst Intern	3
10-106-161	Integrated Projects	3
10-801-197	Reporting-Technical	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		15

SUGGESTED ELECTIVES: Office Politics (10-106-157), Meetings-Organizing (10-106-171), WorkSkills (10-196-102), Project Change Management 1-MS Project (10-107-151), Micro: Access-Part 3 (10-103-143).

This program is fully eligible for financial aid.

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-INTRODUCTION

...Windows desktop elements, help features, document management (create, open, save, print), folder and file management (create, delete, move, find file), Web features, search strategies, shortcuts, screen capture, My Computer/Explorer.

10-103-121 MICRO: WORD-INTRODUCTION ...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; and creating headers and footers. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2 ...advanced word processing features including merge, columns, tables, templates, styles, borders and clip art, Microsoft draw and WordArt, footnotes and endnotes, and creating a Web page. Requires strong introductory Word skills.

10-103-123 MICRO: WORD-PART 3 ...hyphenation, charts, macros, styles, sort/select, outlines, fill-in forms, table of contents, and index. Requires intermediate Word skills.

10-103-131 MICRO: EXCEL-INTRODUCTION

...spreadsheet basics, creating/printing worksheets; formulas, functions, copy/move cells, manipulate rows/columns, generate charts. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...functions of VLOOKUP and IF, date/time functions, templates, multiple worksheets, linking files through formulas, consolidating worksheets, charts and graphs, datamaps, databases, filters, data tables, and pivot tables. Requires strong introductory Excel skills.

10-103-141 MICRO: ACCESS-INTRODUCTION

...database tables, relationships, queries, calculations, aggregate functions, form and report wizards, and compacting. Requires Windows experience.

10-103-142 MICRO: ACCESS-PART 2 ...lookup wizards, parameter queries, custom forms, multi-page forms with tab controls, filters, custom reports with grouping and calculations, data access, Web pages, embedding charts, and hyperlinks. Requires strong introductory Access skills.

10-103-151 MICRO: POWERPOINT-INTRODUCTION

...prepare overheads, handouts, and slide shows using Wizards, templates, clipart, WordArt, animation, transitions, and hyperlinks. Requires Windows experience.

10-103-160 MICRO: OUTLOOK ...use email, personal distribution list, signature, attachments, and task list; schedule appointments using calendar; flag, filter, sort, and merge contacts, add voting buttons, delivery receipts, and delivery dates to messages.

10-106-103 INFORMATION PROCESSING

PRINCIPLES ...information processing cycle and workflow, terminology, hardware, software, ergonomics, security, systems, Internet, and career opportunities.

10-106-106 KEYBOARD-SKILLS ...skill development on the alphabetic keyboard, including top-row number keys, and ten-key pad using analytic/diagnostic software in a structured classroom setting. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 20 WPM.

10-106-107 KEYBOARD-SPEED/ACCURACY 1

...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 35 WPM in a 3-minute timing. Requires ability to touch keyboard at 20 WPM.

10-106-112 KEYBOARD-SPEED/ACCURACY 2

...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 35 WPM.

10-106-113 KEYBOARD-SPEED/ACCURACY 3

...skill development on the alphabetic keyboard pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 45 WPM. Requires ability to touch keyboard at 40 WPM.

10-106-126 ADMINISTRATIVE OFFICE

PROCEDURES 1 ...today's global business environment, including decision making, working as a team member, time management systems, virtual office, intro to meetings, reprographics, processing mail, electronic mail, and machine transcription. Requires experience with Windows, and prior completion of an introductory and intermediate courses in Word.

10-106-136 ADMINISTRATIVE OFFICE

PROCEDURES 2 ...today's global business environment including ethics, information research, presentation skills, travel/conference planning, financial responsibilities, employment and advancement, leadership and management, and machine dictation and transcription.

10-106-138 SOFTWARE SKILLS 1 ...the Windows operating system and Word XP including creating, revising, printing, headers/footers, sections, tables, templates, columns, styles, merging, draw and WordArt, and creating a Web page. Requires ability to touch keyboard at 20 WPM.

10-106-139 SOFTWARE SKILLS 2 ...basic and advanced spreadsheet concepts using Excel XP: creating/printing worksheets, formulas, functions, working with multiple worksheets, linking files, charts/graphs, data lists, analysis tools.

10-106-140 SOFTWARE SKILLS 3 ...Access XP tables, relationships, queries, calculations, aggregate functions, forms and reports, lookups, tab controls, hyperlinks, and data access pages. Word XP macros, styles, outlines, forms, table of contents and index. Requires experience with Windows, and prior completion of an introductory and intermediate courses in Word.

10-106-142 SOFTWARE PROJECTS ...applying Windows 2000 and Word XP features to manage and format business documents while exercising decision-making skills and enhancing keyboarding skills in a team setting. Requires experience with Windows, and prior completion of an introductory and intermediate courses in Word.

10-106-144 ADMINISTRATIVE ASSISTANT

INTERNSHIP ...structured employment with the supervision of a business employer and coordinating instructor; 144 hours of work and 17 hours of class, projects, reports, and discussions relate to student employment. Course should be taken during the last semester.

10-106-152 RECORDS MANAGEMENT ...organization and management of records departments, equipment; and major systems of classification: alphabetic, numeric, geographic, subject, chronologic, and micro systems.

10-106-153 PROFESSIONAL PROFILE ...workplace attributes such as attitude, goal setting, habits, and techniques for success and promotion; leadership and organizational skills; and diversity in the workplace.

10-106-161 INTEGRATED PROJECTS ...efficient application and integration of Word, Excel, PowerPoint, and Access functions in project-based assignments, create a paper and electronic portfolio, and complete software certification practice tests. Requires prior completion of introductory and intermediate courses in Excel and Access and an advanced course in Word.

10-106-172 TELEPHONE SKILLS ...using the telephone effectively and efficiently in the world of work; telephone features, equipment, messaging, cellular technology, pagers, electronic, and voice mail.

Descriptions of courses not found on this page can be found in the back of the catalog.

Agribusiness/Science Technology Program Code 100062

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Agribusiness/Science Technology offers learner-centered, specialized skills training in the general areas of livestock production and agronomics to meet the increasing technological employment needs of the agriculture industry.

Graduates of the Agribusiness/Science Technology Program will be able to:

- Demonstrate business and marketing strategies in our changing agricultural market
- Explore agricultural crop production as it relates to soil properties, fertility needs, and plant functions
- Implement dairy herd management strategies
- Analyze current livestock and feeding practices
- Demonstrate integrated pest management practices to effectively identify and control weeds, insects and diseases.
- Integrate principles of finance into developing profitable agbusiness farm plan
- Distinguish among biological systems of various farm animal species
- Explore biotechnology and reproductive trends and techniques in animals and agricultural crops
- Compute and implement a nutrient management plan
- Incorporate the principles of basic economics into ag-related practices.
- Explore the opportunities in agribusiness and develop skills necessary for successful employment

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic high school math (algebra helpful)
- Ability to use computer keyboard
- Science (general understanding of basic plant and animal biology, chemistry, and physics)

MATH LEVEL

Students should have mastered basic math skills and algebra. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

The Agribusiness/Science Technology Program will prepare a student for employment as a Livestock Production Specialist and/or Crop Production Specialist.

LIVESTOCK PRODUCTION SPECIALIST (LPS):

applies business principles, participates in marketing plans, generates sales of products and services, communicates information about basic animal husbandry, evaluates livestock, evaluates facilities, evaluates management practices, develops rations, applies feeding principles, and keeps current about livestock and feeding practices.

AGRONOMY PRODUCTION SPECIALIST

(APS): generates sales of products and services, provides information about cropping technology, assesses soil conditions, develops crop plans, processes customer orders, applies crop requirements, scouts crops, resolves customer complaints, and keeps up-to-date on new ideas and products in both agronomy and seed.

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

- District Sales Representative
- Livestock Nutritionist
- Agronomist
- Crop Consultant
- Breeding Program Specialist
- Commercial Crop Sprayer Applicator
- Crop Scout Advisor
- Sales Agronomist
- Animal Genetic and Reproductive Consultant
- Dairy Herd Manager
- Ag Credit Analyst

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-006-103	Agri-Business Career Dev	2
10-006-114	Plant Morphology / Physiology	2
10-006-115	Soils-Intro	2
10-006-123	Science-Animal	2
10-106-145	Keyboarding	1
10-804-120	Math-Tech Algebra	3
10-806-155	Chemistry-Basic	4
SEMESTER TOTAL		16

SECOND SEMESTER

10-006-121	Plant Fertility	2
10-006-133	Nutrition-Animal	4
10-103-103	Micro Basics MS Office 1	3
10-801-196	Oral / Interpers Communication	3
10-809-195	Economics	3
	Elective	2
SEMESTER TOTAL		17

THIRD SEMESTER

10-006-105	Crop / Chemical-Agronomic	3
10-006-143	Anatomy / Diseases	3
10-102-138	Financing-Agriculture	3
10-104-110	Marketing Principles	3
10-801-195	Communication-Written	3
	Elective	2
SEMESTER TOTAL		17

FOURTH SEMESTER

10-006-102	Agri-Business Internship OR	3
10-006-104	Agri-Business Field Study	3
10-006-145	Reproduction-Bio Tech	3
10-104-101	Selling Principles	3
10-809-197	Society-Amer Contemp	3
10-809-199	Psychology-Human Rel	3
	Elective	2
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: Dairy Herd Management (10-006-157), Farm Machinery-Crop Related (10-006-151), Farm Mechanization / Material Handling (10-006-153), Environment Science (10-506-120), and Agribusiness Sales and Marketing (10-006-101).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-006-102 AGRI-BUSINESS INTERNSHIP

...student focused professional development in an Agribusiness position based on problem solving, technical development, project assignments, and occupational accountability through measurable work place outcomes.

10-006-103 AGRI-BUSINESS CAREER

DEVELOPMENT ...exploring job opportunities, job skills assessment, personal resume preparation, interviewing techniques, business organization and structure, and professional organizations and growth.

10-006-104 AGRI-BUSINESS FIELD STUDY

...specific instructor assigned projects that utilize resources in the workplace, and cooperative learning in industry settings.

10-006-105 CROP/CHEMICAL-AGRONOMIC

...forage and row crop management practices, pest ID management and control recommendations, crop variety, soil fertility, plant protection product recommendations, pesticide use and safety.

10-006-114 PLANT MORPHOLOGY/PHYSIOLOGY

...plant classification, cell components and functions, plant parts and functions, germination, emergence, growth, development, and reproductive processes.

10-006-115 SOILS-INTRODUCTION

...fundamental knowledge of soils including soil formation and development, soil components, soil profile, soil classification, and soil conservation.

10-006-121 PLANT FERTILITY

...essential plant nutrients, nutrient uptake/function, sampling/testing methods, test interpretation, nutrient sources, nutrient management planning, environmental impact, and personal safety.

10-006-123 SCIENCE-ANIMAL

...animal products, anatomy/physiology, welfare/environments, behavior, safety, health/nutrition, genetics/reproduction, and careers.

10-006-133 NUTRITION-ANIMAL

...practical applications of nutrition principles to livestock feeding, characteristics of feeds, practice in compounding rations, and studies of their relative economy in the management of herds and flocks.

10-006-143 ANATOMY/DISEASES

...physiology and anatomy of farm animals and their diseases and parasites including prevention, treatment, and control.

10-006-145 REPRODUCTION-BIO TECHNOLOGY

...anatomy, physiology, and endocrinology of animal reproduction; selecting for genetic traits; measurements and data; artificial insemination; embryo transfer; genetic engineering; biotechnology applied in animal science; and factors that influence reproduction.

10-102-138 FINANCING-AGRICULTURE

...structural characteristics of agriculture finance, financial statements, financial analysis, credit needs, lending policy, financial legal instruments, time value of money, and other issues related to agricultural finance.

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, distribution, pricing, promotional decisions, and international marketing strategy planning.

Descriptions of courses not found on this page can be found in the back of the catalog.

Applied Engineering Technology

Program Code 106237

ASSOCIATE DEGREE

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

This program is designed to prepare technicians and team members to work in the manufacturing industry sector. In today's competitive environment, there is a need for specialized training in a variety of manufacturing areas. Numerous participants of our workshop and seminar series have also expressed the desire for additional knowledge in the seminar topic areas with which they had become acquainted, and preferred to have that additional instruction become a part of a recognized NWTC program or certificate. This new AET program is a part of a new statewide program.

The program provides students with a core background in general manufacturing sciences. The learner selects an area of specialization.

The core curriculum introduces students to:

- Manufacturing Materials, Processes and Practices
- Quality Assurance
- Quality Systems
- Statistical Process Control
- Materials Resource Planning
- Standards and Regulations
- Precision Measuring
- Problem Solving Techniques
- Blueprint Reading

Areas of specialization include:

- Quality Assurance Technician
- Industrial/Manufacturing Engineering Technician
- Safety Technician

Occupational support, general education and elective courses support this occupational curriculum so that a learner can earn an Associate of Applied Science degree.

The program will incorporate a variety of delivery approaches intended to increase learner access to degree programs. The core curriculum and most of the specialized courses will be offered in both traditional classroom format and in an individualized learning format.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High School diploma or equivalent

MATH LEVEL

High school algebra or equivalent. For a description of algebra skills, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the Applied Engineering Technology Program with a specialization in Quality Assurance Technician will have the potential for employment as a Quality Technician, and with additional education and/or work experience as a Quality Control Supervisor, a Quality Assurance Manager or an ASQC Certified Quality Engineer. The Quality Technician specialty is designed to address the background needed to sit for certification examinations offered by the American Society for Quality for inspectors, auditors and technicians.

A graduate with specialization in Industrial/Manufacturing Engineering Technician will have the potential for employment as an Industrial Engineering Technician, Manufacturing Engineering Technician, Standard Engineering Technician and Productivity Improvement Technician. It will also provide skill training for members of Continuous Improvement Teams to increase the likelihood of success for their improvement projects. Individual courses will serve as a significant choice as electives for other NWTC associate degree programs.

A graduate with a specialization in Safety Technician will be able to contribute to a safety and health program in any size organization. This specialization is ideal for preparing you to work with supervisors and employees to ensure a safe and healthy work environment. Large organizations utilize safety technicians to work on the floor with employees and supervisors. Small organizations may have employee safety responsibilities assigned as an addition to other jobs, and this specialization will prepare you for those hands on responsibilities.

CURRICULUM

The Applied Engineering Technology program consists of 19 credits of core course material, 15 credits of general education, 12 credits of occupational support courses, 6 credits of electives, and 15 credits of technical specialization. Upon graduation, a student will have completed 69 credits.

CORE COURSES

Course No.	Description	Credits
10-623-108	Manufacturing Materials	1
10-623-111	Manufacturing Processes	2
10-623-106	Interpreting Engineering Drawings	2
10-623-107	Manufacturing Practices	3
10-623-114	Material Resource Planning	2
10-623-100	Standards and Regulations	1
10-623-101	Quality Assurance	1
10-623-105	Precision Measuring	1
10-623-109	Problem Solving	2
10-623-103	Quality Systems	2
10-623-102	Statistical Process Control	2
TOTAL		19

GENERAL EDUCATION

10-801-195	Communication-Written	3
10-801-196	Oral/Interpers Comm	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
10-809-199	Psychology-Human Rel	3
TOTAL		15

OCCUPATIONAL SUPPORT

10-103-103	Micro Basics MS Office	3
10-804-130	Mach-Algebra/Trig	3
10-804-131	Math-Algebra/Inter	3
10-806-150	Physics I-Technical	3
ELECTIVE		6
TOTAL		12

INDUSTRIAL/MANUFACTURING ENGINEERING TECHNICIAN SPECIALIZATION

10-623-121	Work Measurement	3
10-623-161	Facilities Planning	3
10-623-162	Process Improvement	2
10-623-163	Equipment Planning and Justification	2
10-623-164	Ergonomics/Safety	2
10-623-165	Process Planning	3
TOTAL		15

QUALITY ASSURANCE TECHNICIAN SPECIALIZATION

10-623-113	Quality Documentation	3
10-623-115	Cust/Vendor Rel/Audits	3
10-623-116	Inspection	3
10-806-131	Material Science	3
10-623-133	Quality Engineering	3
TOTAL		15

SAFETY TECHNICIAN SPECIALIZATION

10-449-100	Safety Management	3
10-449-101	Regulatory Compliance	3
10-449-102	Accident Investigation	3
10-449-103	Industrial Hygiene-Intro	3
10-449-104	Audits and Inspections	3
TOTAL		15

SUGGESTED ELECTIVES:

10-449-105	Emergency Spill Response	3
10-449-106	Construction Safety	3

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-623-121 WORK MEASUREMENT ...the learner will develop skills in designing workstations, developing better work methods, establishing work standards, balancing assembly lines, and estimating labor costs. The time study techniques you will use include predetermined time standard system, stopwatch and work sampling.

10-623-164 ERGONOMICS AND WORKPLACE SAFETY ...student will be able to identify, analyze, and recommend improvements to work areas to minimize the opportunity for work place injuries. They will become familiar with the ergonomic guidelines, analyze the costs and benefits of ergonomic improvements and investigate accidents to identify possible causes or problem areas.

10-623-163 EQUIPMENT JUSTIFICATION ...student will develop the skills to collect data and prepare justification, assist in new equipment selection, installation, support and monitoring, and monitor equipment's preventive maintenance program.

10-623-132 PROCESS PLANNING ...instruction provides the student with the skills to take a new product from the design stage to production while meeting the product and quality specifications, and cost target requirements by determining production sequence, specifying required tools and equipment, and scheduling manpower and machinery in order to meet production dates.

10-623-162 PROCESS IMPROVEMENT ...this course will provide the student with the skills to go through the process from identifying cost reduction opportunities through installing the improved methods with the use of process improvement tools.

10-623-161 FACILITY PLANNING AND MATERIAL HANDLING ...this course will provide the student a practical means to use data to develop and improve plant and facility layouts and improve material handling methods that will yield higher production, lower costs, and/or improve quality and customer service.

10-623-116 INSPECTION ...advanced metrology and introduction to non-destructive examination.

10-449-102 ACCIDENT/INCIDENT INVESTIGATION ...in this course you will determine cause, uncover indirect accident causes, prevent similar accidents from occurring, document facts, provide information on costs and promote safety. In addition you will learn how to train first line supervisors in the area of accident/incident investigation, and train employees how to report accidents/incidents. OSHA record keeping and corrective action will also be addressed within this course.

10-449-104 AUDITS AND INSPECTIONS ...this course will examine the process that takes place during the planning, design and operational phases of the safety system. The student will learn how to conduct the monitoring function in an organization to locate and report existing and potential hazards having the capacity to cause accident in the workplace. They will see how to locate and interpret past injury and illness data and compare to current data.

10-449-101 COMPLYING WITH SAFETY AND HEALTH REGULATIONS ...this self-paced course will provide an overview of occupational safety and health compliance procedures emphasizing areas such as hazard communication, lockout/tagout, confined space entry, personnel protective equipment, machine guarding, hand and portable tools, and fire safety. From this base knowledge the student will be able to initiate and/or evaluate written compliance programs. The student will be introduced to the potential hazards and regulator compliance issues of chemicals. The student will learn concepts in the management of hazardous material and wastes as well as the essential skills required to serve in the capacity of an environmental professional.

10-449-105 CONSTRUCTION SAFETY ...this self-paced course will provide an overview of occupational safety and health construction compliance procedures emphasizing OSHA's 1926 regulations for construction. Significant time will be spent on competent person training and qualified person training requirements and employees training on the job site. Students will learn how to conduct a job site inspection and how to take corrective action. The student will learn the concept of multiple contractors on a job site and who is responsible for employee safety and health. They will also learn how to interface with general industry safety programs when working in existing manufacturing facilities.

10-449-106 EMERGENCY SPILL RESPONSE ...the student will be introduced to the potential hazards and regulatory compliance issues of chemicals. The student will learn concepts in the management of hazardous materials and wastes as well as the essential skills required to serve in the capacity of an environmental professional.

In this course participants will discover how a substance is determined to be hazardous and the various physical and health hazards associated with hazardous substances. The means of identifying hazardous substances are also covered. Students will learn how to use manufacturer and secondary labels to determine the hazards of materials. Signs, placards and Material Safety Data Sheets are also explored as a means of obtaining information about hazardous substances.

Emphasis is placed on the emergency response procedures a first responder may need to initiate as covered in OSHA 29 CFR 1910.120. In addition, the student will examine the initial containment and site security measures that may be used following a release of a hazardous substance. The effects of hazardous substance releases and the procedures following a release are also discussed. Finally, the student will create an Emergency Spill and Response program tailored for an employer.

10-449-103 INTRODUCTION TO INDUSTRIAL HYGIENE ...fault finding, with the emphasis on criticism and fact-finding, with the emphasis on locating potential hazards that can adversely affect safety and health will be analyzed. The course will also evaluate and assess safety and health risks associated with equipment, material, processes and activities.

This self-paced course emphasizes calibrating and operating industrial hygiene related equipment, sampling methods, collecting data and interpreting results. From this base knowledge the student will be able to operate industrial hygiene equipment in a manufacturing environment and apply the results to reduce occupational exposures.

10-449-100 SAFETY MANAGEMENT ...this self-paced course provides an overview of occupational health and safety management principles, systems and supporting techniques to initiate and/or improve an organization's safety management system. Included is a focus on job safety analysis and fault tree analysis. From this base knowledge the student will be able to coordinate safety policies and objectives in an orderly, consistent manner into existing functional area such as operations, finance, quality and environmental management.

10-623-115 CUSTOMER/VENDOR RELATIONS/AUDITS ...the quality department's role in customer relations, vendor certification programs, and performing internal and vendor audits

10-623-113 QUALITY DOCUMENTATION ...ISO 9000, documentation, writing sampling plans, procedure writing, and customer needs evaluations.

10-623-133 QUALITY ENGINEERING ...planning for quality of design, reliability, manufacture planning, and design of experiments.

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Apprenticeship

OFFERED AT THE GREEN BAY, MARINETTE AND STURGEON BAY CAMPUSES

Course information: Green Bay (920) 498-5682, Marinette campus (715) 735-9361, or Sturgeon Bay campus (920) 743-2207. Toll free: (800) 422-NWTC.

WHAT IS APPRENTICESHIP?

It is an earn-while-you-learn program of on-the-job training combined with related classroom instruction that is normally provided by the district technical college.

As an apprentice, students are trained under a written training agreement called an indenture. While indentured, the employer agrees to teach the student the skills of the trade and the apprentice agrees to learn the skills involved. Other conditions of the indenture, such as the length of training, amount of pay, the rate of periodic pay increases, and the related classroom hours are covered. An apprenticeship is one of the best ways to enter a skilled occupation.

WHAT IS INVOLVED?

An indentured apprentice works a regular workweek, is paid apprentice wages, and also attends paid related instruction on a regularly scheduled basis. The apprentice's progress in both the on-the-job training and classroom instruction is evaluated and appropriate records are maintained.

There is no discrimination in any phase of apprenticeship employment and training.

Upon completion of the training program, apprentices will receive a certificate from the state of Wisconsin certifying each one as a completed apprentice. To protect the interests of all parties concerned and to assist in the enforcement of the various aspects of the agreement, the Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards, is given the responsibility of overall supervision of the apprenticeship program.

WHAT ARE THE QUALIFICATIONS FOR AN APPLICANT?

The basic requirement is that the applicant be at least 16 years of age. In most cases, however, the applicant is also required to be a high school graduate or to have passed the high school equivalency test. It is also required to take the Accuplacer test which is provided at Northeast Wisconsin Technical College.

Most employers and/or joint apprenticeship committees have approved selection standards with more exacting requirements. In some trades, the requirements for the applicant include one or two years of high school math. Some trades require that the applicant take an aptitude test.

HOW LONG DOES IT TAKE?

The length of the apprenticeship depends upon the skilled occupation involved. Apprentice programs vary from two to five years. The average program is four years in length.

WHAT RELATED CLASSROOM INSTRUCTION IS INVOLVED?

The number of classroom hours range from 288 hours to 1,008 hours of paid related instruction, depending upon the skilled occupation, with the average being 400 hours. This related instruction teaches the apprentice the theory behind the skills learned on the job. Apprentices are required to attend night school on their own time and at their own expense.

WHERE IS THE RELATED TRAINING OFFERED?

The Clayton J. Smits Apprenticeship Center of Northeast Wisconsin Technical College offers related classroom instruction at the Green Bay, Marinette, and Sturgeon Bay campuses.

WHAT IS AN APPRENTICEABLE OCCUPATION?

An apprenticeable occupation is clearly identified and commonly recognized throughout an industry. It involves manual, mechanical, or technical skills and knowledge that require a minimum of 2000 hours of on-the-job work experience. It also requires an average of 400 hours of paid related classroom instruction to supplement the on-the-job training. The state of Wisconsin has recognized more than 300 apprenticeable occupations. Some of the occupations served by the Clayton J. Smits Apprenticeship Center of NWTC are:

Adjuster/Finisher
Cabinetmaker
Carpenter
Electrician
Construction Electrician
Industrial Electrician
Residential Electrician
Voice Data Video Technician
Electrical/Instrumentation
Foundry
Instrumentation
Machinist
Regular Machinist
Maintenance Machinist
Tool & Die
Mason
Bricklayer
Block Layer
Cement Finisher
Plasterer
Tile Setter
Machine Repair
Mechanical Adjuster
Maintenance Mechanic (Millwright)
Construction Maintenance Mechanic
Industrial Maintenance Mechanic
Industrial Pipefitter
Plumber
Resilient Floor
Sheet Metal
Steamfitter
ABC HVAC

HOW DO I START?

Start by learning what you can about the skilled occupation in which you are interested. Talk to people who are in the occupation, both employers and employees, counselors at your high school, or the local technical college, employers' associations, and labor unions. Remember, looking for an apprenticeship is like looking for a job. Applications should be made directly with employers or joint apprenticeship committees.

If you are entering an occupation that involves action by a joint apprenticeship committee, it will be necessary for you to go through their selection and interview procedures. Very often a committee may maintain a waiting list of qualified applicants who passed the committee's selection procedures.

WHAT IS AN APPRENTICESHIP EMPLOYER?

An employer must be an individual, a joint apprenticeship committee, an owner of a business, a company, or a corporation who can teach the skills involved in the occupation. All sponsors of indentured apprentices are equal opportunity employers.

WHAT ARE APPRENTICE WAGES?

Wages in the various skilled occupations and localities vary; most apprentices start at approximately 50% of the current skilled rate.

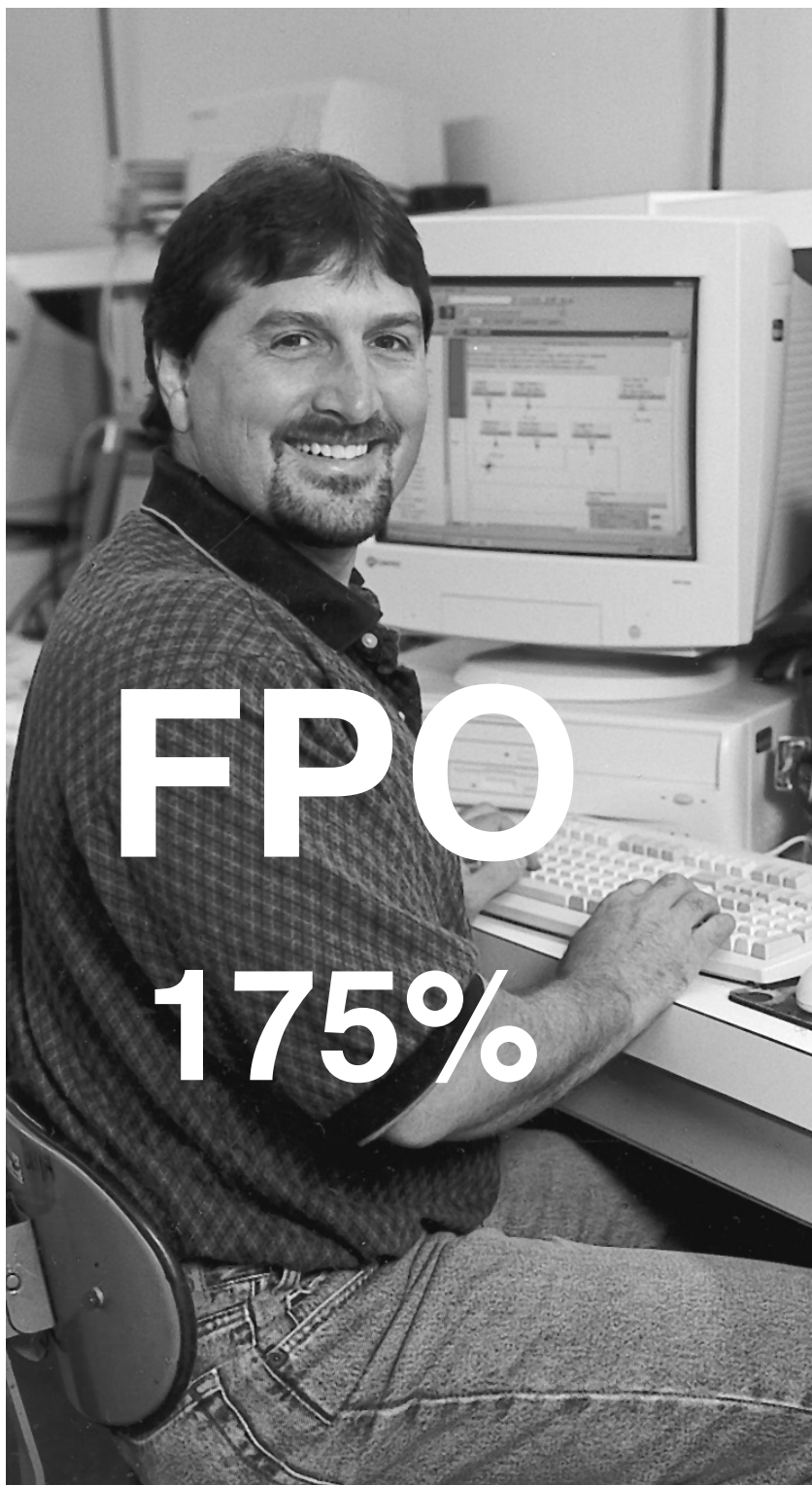
The apprentice is on a progressive wage scale with increases every six months, so that during the program the apprentice will average 60% of the skilled rate.

HOW DO I GET MORE INFORMATION?

For more information about a specific skilled occupation, contact:

Bureau of Apprenticeship Standards
2740 W. Mason Street
P.O. Box 19042
Green Bay, WI 54307-9042
(920) 492-5618

Apprenticeship Coordinator,
Trades & Technical Division
Northeast Wisconsin Technical College
2740 W. Mason Street
P.O. Box 19042
Green Bay, WI 54307-9042
(920) 498-5704
(800) 422-NWTC, Ext. 5704



Descriptions of courses not found on this page can be found in the back of the catalog.

Architectural Technology

Program Code 106141

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Architectural Technology prepares students to work for architects, engineers, or material manufacturers to produce drawings for wood, steel, masonry, and reinforced concrete structures.

The graduate of the Architectural Technology program will be able to:

- Develop working drawings for commercial buildings under the direction of a registered professional.
- Develop residential working drawings to meet code standards and client needs.
- Perform calculations and produce drawings for mechanical systems for buildings under the direction of a registered professional.
- Produce drawings and details for structural members and connections under the direction of a registered professional.
- Explain the design and construction process.
- Solve problems creatively and critically.
- Communicate architectural facts and ideas orally and in writing.
- Communicate graphic architectural ideas utilizing sketching techniques.
- Work as a team to produce projects.
- Exercise a proper work ethic.
- Display a positive attitude toward their profession.
- Apply codes, manufacturers' standards, tables, and technical manuals in design and drafting of a structure.
- Apply mathematical principles and formulas and explain structural load tables as applied to building construction.
- Coordinate building specifications with working drawings.
- Choose appropriate materials for use in building construction.
- Estimate the materials required to construct a residential building.
- Operate computer drafting equipment, hardware and software, to produce architectural working drawings.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Those who do not complete high school may establish their equivalency through GED testing or other entrance tests.)
- High school background in mathematics, science, and industrial education and/or construction related experience
- High school algebra or equivalent

MATH LEVEL

Students should have mastered algebra skills before entering this program. For a description of algebra skills, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Architectural Technician, Building Materials Sales Person, Building Mechanical Technician, Shop Drawing Draftsperson, Structural Draftsperson, Residential Designer, as well as many other construction related positions.

ARCHITECTURAL TECHNICIAN: works under the direction and supervision of an architect or professional engineer preparing working drawings on a conventional or CAD system for residential, commercial, industrial, or similar buildings.

BUILDING MATERIALS SALES PERSON: works in retail sales of building products in a building materials center or similar establishment.

BUILDING MECHANICAL TECHNICIAN: works under the direction and supervision of an architect or professional engineer preparing working drawings on a conventional drafting or CAD system for heating, plumbing, and electrical systems within a building.

SHOP DRAWING DRAFTPERSON: 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 fabricator/professional engineer preparing working drawings on a conventional drafting or CAD system 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, a graduate may find other opportunities for employment.

- Architect
- Building Inspector
- Chief Draftsperson
- Commercial or Industrial Estimator
- Construction Engineer
- Structural Engineer

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-614-115	Architectural Drafting Prin	4
10-614-116	Architectural Computer Appl	2
10-614-121	Materials-Building Const	3
10-801-196	Oral / Interpers Communication	3
10-804-130	Math-Algebra / Trigonometry	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		18

SECOND SEMESTER

10-614-120	CAD-Architectural	2
10-614-125	Residential Design/Drafting	4
10-614-131	Structural Draft-Wood/Steel	3
10-804-131	Math-Algebra/Inter	3
10-806-150	Physics 1-Technical	3
	Elective	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-614-135	Commercial Draft-Steel	4
10-614-141	Structural Draft-Concret	3
10-614-151	Estimating-Building	3
10-614-160	Structural Analysis	3
10-801-195	Communication-Written	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-614-146	Systems-Mechanical	3
10-614-147	Commercial Draft-Concrete	4
10-801-197	Reporting-Technical	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		16

SUGGESTED ELECTIVES: Survey / Site Development (10-607-107), Architectural Professional Practice (10-614-127), Architectural Models Construction (10-614-175).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-614-115 ARCHITECTURAL DRAFTING

PRINCIPLES ...traditional methods to develop basic architectural drafting techniques, linework, lettering, and geometric construction; terminology and construction methods; residential working drawing interpretation. (Prerequisite: Accepted into Architectural)

10-614-116 ARCHITECTURAL COMPUTER

APPLICATIONS ...PC Hardware; Microsoft Windows, Word, Excel, Powerpoint, and Internet usage; Drafting Software and an introduction to AutoCAD. (Prerequisite: Accepted into Architectural)

10-614-121 MATERIALS-BUILDING

CONSTRUCTION ...CSI materials filing system, general requirements/ forms, site work, concrete, masonry, metals, wood and plastics, thermal/moisture protection, doors/windows, finishes and specialties, equipment/furnishings, special construction, and conveying systems. (Prerequisite: Accepted into Architectural)

10-614-125 RESIDENTIAL DESIGN/DRAFTING

...residential design principles, architectural drafting techniques using traditional and CAD methods to develop residential working drawings; team projects and presentation techniques. (Prerequisites: 10-614-115, Architectural Drafting Principles; 10-614-121, Materials-Building Construction; 10-804-130, Algebra/Trigonometry)

10-614-131 STRUCTURAL DRAFT-WOOD/STEEL

...application of math to buildings, structural wood, and structural steel: standard methods of drawing structural wood and steel; familiarity with references used in structural wood and steel industries. (Prerequisites: 10-614-115, Architectural Drafting Principles; 10-614-121, Materials-Building Construction; 10-614-116, Architectural Computer Application)

10-614-135 COMMERCIAL DRAFTING-STEEL

...preparation of architectural working drawings for steel frame buildings: plans, elevations, sections, and details. (Prerequisites: 10-614-120, CAD Architectural; 10-614-131, Structural Drafting-Wood/Steel; 10-614-125, Residential Design/Drafting)

10-614-141 STRUCTURAL DRAFT-CONCRETE

...application of building loads and codes to determine structural member size, reinforced/prestressed concrete, precast concrete, and structural concrete drawing methods. (Prerequisites: 10-614-120, CAD-Architectural; 10-614-131, Structural Drafting-Wood/Steel)

10-614-146 SYSTEMS-MECHANICAL

...plumbing, HVAC/R, electrical systems, calculations, mechanical drafting, space requirements, codes, mechanical specification, and construction within the building. (Prerequisites: 10-614-125, Residential Design/Drafting; 10-614-120, CAD-Architectural; 10-806-150, Physics 1-Tech)

10-614-147 COMMERCIAL DRAFTING-

CONCRETE ...working drawings for reinforced and precast concrete framed buildings, accepted symbols and dimensioning with field dimensions and preliminary drawings, and working drawings for a structural concrete frame building. (Prerequisites: 10-614-135, Commercial Drafting-Steel; 10-614-141, Structural Drafting-Concrete)

10-614-151 ESTIMATING-BUILDING

...residential materials take off and square foot material and labor costs along with construction techniques. (Prerequisites: 10-614-115, Architectural Drafting Principle; 10-614-121, Materials-Building Construction; 10-804-130, Algebra/Trigonometry)

10-614-160 STRUCTURAL ANALYSIS

...mathematical investigation of forces, force actions, beam and column design, properties of sections, and application to wood member structural design. (Prerequisites: 10-614-125, Residential Design/Drafting; 10-804-131, Algebra-Intermediate; 10-806-150, Physics 1-Tech)

Descriptions of courses not found on this page can be found in the back of the catalog.

Auto Collision Repair and Refinish Manager

ASSOCIATE DEGREE - TWO YEARS

Program Code 104051

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

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.

Graduates of the program will have the same employment potential as the graduate of the two-year technical diploma with the additional opportunities for employment as:

- Insurance Adjuster and Appraiser
- Auto Collision Repair and Refinishing Center Supervisor
- Auto Collision Repair and Refinishing Center Department Manager
- Equipment and Supplies Specialist

Students will gain the experience of observing the various management positions that are available to them. The added experience of the management positions will allow the graduate to increase their value to the Auto Collision Repair and Refinishing Industry. The Auto Collision Repair and Refinish Manager Associate Degree will also provide the student with the opportunity to transfer credit to a four-year college, and pursue an automotive industry related career.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests)
- High school background in mathematics, science, and technology education

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basis Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of this program will receive all of the technical training that the two-year technical diploma program offers. In addition, the student will be provided with the opportunity to pursue a career as an Insurance Adjuster/Appraiser, Collision Center Owner, Collision Center Manager, and Manufacturers Representative.

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

CURRICULUM

The Auto Collision Repair and Refinish Manager Associate Degree is a two-year program. Upon graduation, a students will have completed 70 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-405-101	Auto Collision Ref-Intro	1
10-405-103	Auto Collision Repair	1
10-405-105	Auto Collision-Plas / Comp	2
10-405-109	Auto Refinish Surface Prep	2
10-405-113	Auto Collision Refinish App	3
10-405-117	Auto Collision Detailing	1
10-801-195	Communication-Written	3
10-801-197	Reporting-Technical	3
10-804-120	Math-Tech Algebra	3
SEMESTER TOTAL		19

SECOND SEMESTER

10-405-120	Auto Collision Finish Def	2
10-405-124	Auto Refinishing-Advanced	3
10-405-128	Auto Color Adjustment/Tint	3
10-405-131	Auto Coll Refin Occup Exp	1
10-405-132	Auto Collision Damage Rprts	2
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-405-107	Auto Collision Trim/Hdware	1
10-405-111	Auto Glass/Hardware	2
10-405-115	Auto Collision Non-Struct	3
10-442-144	Auto Collision Welding	2
10-602-110	Auto Collision Mechanical Serv	3
10-801-196	Oral /Interpers Communication	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-405-122	Auto Collision Damage Analy	2
10-405-126	Auto Collision Structural	3
10-405-130	Auto Collision Sectioning	3
10-405-133	Auto Coll Repair Occup Exp	1
10-442-146	Auto Collision Welding-Adv	2
10-602-117	Wiring/Schematics Tech	1
10-602-118	DC Electricity Technology	1
10-602-119	Auto Collision Electronics	1
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: 10-102-158, Business-Intro; 10-145-177, Small Business; 10-104-191, Customer Service Management.

ACCREDITATION: Certified as ASE training site, and to use ASE Seal of Excellence.

ASSOCIATION: National Institute for Automotive Service Excellence.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-405-101 AUTO COLLISION REFINISH-INTRODUCTION ...industry career opportunities and certifications, refinishing safety and environmental regulations, automotive paints, and paint application equipment.

10-405-103 AUTO COLLISION REPAIR ...career opportunities, expectations, and certifications, related safety, sheet metal characteristics and analysis, safe equipment, repair procedures on basic dents and rust, sheet metal patch fabrication and installation, corrosion protection.

10-405-105 AUTO COLLISION-PLASTICS/COMPOSITES ...identification of automotive plastics, making repair or replace decisions, repair of plastics by plastic welding and the use of adhesives, and retexturing and refinishing of plastics and composites. (Prerequisite: 10-405-101, Auto Collision Refinishing Intro)

10-405-107 AUTO COLLISION TRIM/HARDWARE ...safe removal and replacement procedures of: exterior and interior trim, restraint systems, vinyl tops and convertible tops, utilizing the correct tools, and industry accepted procedures.

10-405-109 AUTO REFINISHING SURFACE PREP ...planning the refinishing process, paint removal, cleaning and metal conditioning, sanding, masking, preparing adjacent panels for blending, and application of stone resistant materials. (Prerequisite: 10-405-101, Auto Collision Refinishing Intro)

10-405-111 AUTOMOBILE GLASS/HARDWARE ...glass types, functions, performance, tools, air and water leak diagnosis and repair, safe repair, and replacement procedures for auto glass, and their related components; utilizing industry accepted procedures.

10-405-113 AUTO COLLISION REFINISH APPLICATION ...the painting environment, using air supply equipment, mixing paint, and the application of undercoats and topcoats. (Prerequisite: 10-405-101, Auto Collision Refinishing Intro)

10-405-115 AUTO COLLISION NON-STRUCTURAL ...vehicle construction, part identification, non-structural damage analysis, repair sequence planning, non-structural panel replacement procedures and tool use, non-structural panel repair procedures, corrosion protection, and time management skills for repair procedures. (Prerequisite: 10-405-103, Auto Collision Repair; 10-405-107, Auto Collision Trim/Hardware)

10-405-117 AUTO COLLISION DETAILING ...proper vehicle detailing, including interior cleaning, engine compartment cleaning, exterior cleaning, repairing minor surface defects and buffing, and application of decals, stripes and graphics.

10-405-120 AUTO COLLISION FINISH DEFECTS ...diagnosis and repair of finish defects, including contamination defects, spray technique defects, drying and curing problems, defects from improper preparation, environmental damage, and paint film failures. (Prerequisites: 10-405-101, Auto Collision Refinishing Intro; 10-405-109, Auto Surface Prep for Collision Refinishing; 10-405-113, Auto Collision Refinish Application Systems)

10-405-122 AUTO COLLISION DAMAGE ANALYSIS ...vehicle construction, collision forces, structural damage analysis, measuring equipment, damage diagnosis, and repair planning.

10-405-124 AUTO REFINISHING-ADVANCED ...advanced vehicle refinishing techniques, including blending, tri-coat finishes, and custom painting. (Prerequisites: 10-405-101, Auto Collision Refinishing Intro; 10-405-109, Auto Surface Prep for Collision Refinishing; 10-405-113, Auto Collision Refinish Application Systems)

10-405-126 AUTO COLLISION STRUCTURAL ...hydraulic pulling systems, pulling procedures, stress relieving, steel types, straightening procedures for front, rear, side and roof damage, and frame and suspension alignment. (Prerequisites: 10-405-103, Auto Collision Rep; 10-405-107, Collision Trim/Hardware; 10-405-111, Auto Glass/Hardware; 10-405-115, Collision Non-Structural; 10-405-122, Collision Damage Analysis; 10-442-144, Collision Welding; 10-602-110 Collision Mech Serv)

10-405-128 AUTO COLOR ADJUSTMENT/TINT...color theory, color movement, color adjustment and testing color match. (Prerequisites: 10-405-101, Auto Collision Refinishing Intro; 10-405-113, Auto Collision Refinish Appl Systems)

10-405-130 AUTO COLLISION SECTIONING ...full and partial structural panel replacement guidelines and procedures, sectioning joints required in replacement of: quarter panels, front/rear rails, rocker panels, pillars, floor panels, and full body sectioning. (Prerequisites: 10-405-103, Auto Collision Rep; 10-405-107, Collision Trim/Hardware; 10-405-111, Auto Glass/Hardware; 10-405-115, Collision Non-Structural; 10-405-122, Collision Damage Analysis; 10-442-144, Collision Welding; 10-602-110 Collision Mech Serv)

10-405-131 AUTO COLLISION REFINISHING OCCUPATIONAL EXPERIENCE ...utilize the program skills learned in the auto collision refinishing center environment. The student will be required to refinish vehicle damage with the skills learned to industry guidelines and timelines.

10-405-132 AUTO COLLISION DAMAGE REPORTS ...vehicle body construction, damage analysis, vehicle identification, reference manuals, and writing damage reports both manually and computer aided.

10-405-133 AUTO COLLISION REPAIR OCCUPATIONAL EXPERIENCE ...utilize the program skills learned in the auto collision center environment. The student will be required to repair vehicle damage with the skills learned to industry guidelines, and timelines.

10-442-144 AUTO COLLISION WELDING ...welding processes, machines and accessories, gas metal arc welding (wire), oxyacetylene cutting, welding and brazing, and gas tungsten arc welding.

10-442-146 ADVANCED WELD/COLL REPAIR ...advanced welding procedures necessary for an Auto Collision Repair Technician, including GTAW on aluminum along with GMAW on 1/8 inch thick or thicker steel.

10-602-110 MECHANICAL SERVICE-COLL REPAIR ...automotive systems diagnostic, repair and adjustment procedures covering commonly effected areas of the automobile regularly repaired by an Auto Collision Technician.

10-602-117 WIRING/SCHEMATICS TECHNOLOGY ...electrical symbols, wiring diagrams, tracing wiring circuits, and diagnosing electrical problems with wiring diagrams, design an automotive electrical circuit.

10-602-118 DC ELECTRICITY TECHNOLOGY ...Ohms, amps, voltage, wire repair, series and parallel circuits, meter use, magnetism. Research paper comparing and contrasting A/C and D/C electrical applications.

10-602-119 AUTO COLLISION ELECTRONICS ...electrical circuit diagnosis, troubleshooting and repair of commonly effected circuits that an Auto Collision Technician will encounter.

Descriptions of courses not found on this page can be found in the back of the catalog.

Auto Collision Repair and Refinishing Technician

TECHNICAL DIPLOMA - TWO YEARS

Program Code 324051

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Auto Collision Repair and Refinishing Technician prepares students to repair and refinish damaged bodies and parts of automobiles and light trucks.

Graduates of the Auto Collision Repair and Refinishing Technician Program will be able to:

- 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
- 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

NWTC requires an entrance skill inventory for all program students. Please see the AccuPlacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests)
- High school background in mathematics, science, and technology education

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Auto Collision Repair Technician, Auto Collision Refinishing Technician, Frame and Alignment Technician, and Trim and Glass Installer.

AUTO COLLISION REPAIR TECHNICIAN:

repairs damaged bodies of cars and light trucks; works with all body parts and sections; 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.

FRAME AND ALIGNMENT SPECIALIST:

straightens, welds, replaces, and aligns all types of frames and suspensions of cars and trucks to restore them to factory specifications.

UNI-BODY REPAIR SPECIALIST:

repairs unitized vehicles by analyzing, measuring, and pulling the unibody structure to the proper dimensions; and replaces structural parts that are not repairable using proper structural parts sectioning techniques to return the vehicle to factory specifications.

TRIM AND GLASS INSTALLER: removes, replaces, or repairs all types of glass or glass-related problems on all types of vehicles; removes and replaces upholstery; and repairs interior and exterior trim.

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

- Insurance Adjuster and Appraiser
- Equipment and Supplies Specialist
- Manager/Shop Owner

CURRICULUM

The Auto Collision Repair and Refinishing Technician Associate Degree is a two-year program. Upon graduation, a students will have completed 55 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-405-101	Auto Collision Refinish-Intro	1
10-405-105	Auto Coll-Plastics /Composite	2
10-405-109	Auto Refinishing Surface Prep	2
10-405-113	Auto Collision Refinish Appli	3
10-405-117	Auto Collision Detailing	1
31-804-301	Math I Trades	2
31-801-385	Communicating-Writing	1
32-405-320	Auto Coll Ind Shadowing	1
SEMESTER		13

SECOND SEMESTER

10-405-120	Auto Collision Finish Defects	2
10-405-124	Auto Refinishing-Advanced	3
10-405-128	Auto Color Adjustment and Tint	3
10-405-132	Auto Collision Damage Reports	2
32-806-353	Science Mechanics	2
10-103-111	Micro: Windows Basic	1
10-103-121	Micro: Word-Introduction	1
SEMESTER		14

THIRD SEMESTER

10-405-103	Auto Collision Repair	1
10-405-107	Auto Collision Trim/Hdwr	1
10-405-111	Automobile Glass and Hdwr	2
10-405-115	Auto Collision Non-Structural	3
10-442-144	Auto Collision Welding	2
10-602-110	Mechanical Service-Coll Repair	3
31-801-386	Communicating-Interpersonally	1
SEMESTER		13

FOURTH SEMESTER

10-405-122	Auto Coll Damage Analysis	2
10-405-126	Auto Collision Structural	3
10-405-130	Auto Collision Sectioning	3
10-442-146	Advanced Weld/Coll Repair	2
10-602-117	Wiring/Schematics Technology	1
10-602-118	DC Electricity	1
10-602-119	Auto Collision Electronics	1
31-809-301	Social Science Survey	2
SEMESTER		15

ACCREDITATION: Certified as ASE training site, and to use ASE Seal of Excellence.

ASSOCIATION: National Institute for Automotive Service Excellence.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-405-101 AUTO COLLISION REFINISH-INTRO

...industry career opportunities and certifications, refinishing safety and environmental regulations, automotive paints, and paint application equipment.

10-405-103 AUTO COLLISION REPAIR ...industry career opportunities, expectations, and certifications, personal and shop safety, sheet metal characteristics and analysis, safe equipment use during basic repair procedures on dents and rust, sheet metal patch fabrication and installation, corrosion protection.

10-405-105 AUTO COLL-PLASTICS/COMPOSITE ...identification of automotive plastics, making repair or replace decisions, repair of plastics by plastic welding and the use of adhesives, and retexturing and refinishing of plastics and composites.

10-405-107 AUTO COLLISION TRIM/HDWR ...safe removal and replacement procedures of: exterior and interior trim, restraint systems, vinyl tops and convertible tops, utilizing the correct tools, and industry accepted procedures.

10-405-109 AUTO REFINISHING SURFACE PREP ...planning the refinishing process, paint removal, cleaning and metal conditioning, sanding, masking, preparing adjacent panels for blending, and application of stone resistant materials.

10-405-111 AUTOMOBILE GLASS AND /HDWR ...glass types, functions, performance, tools, air and water leak diagnosis and repair, safe repair, and replacement procedures for auto glass, and their related components; utilizing industry accepted procedures.

10-405-113 AUTO COLLISION REFINISH APPLI ...the painting environment, using air supply equipment, mixing paint, and the application of undercoats and topcoats.

10-405-115 AUTO COLLISION NON-STRUCTURAL ...vehicle construction, part identification, non-structural damage analysis, repair sequence planning, non-structural panel replacement procedures and tool use, non-structural panel repair procedures, corrosion protection, and time management skills for repair procedures.

10-405-117 AUTO COLLISION DETAILING

...proper vehicle detailing, including interior cleaning, engine compartment cleaning, exterior cleaning, repairing minor surface defects and buffing, and application of decals, stripes and graphics.

10-405-120 AUTO COLLISION FINISH DEFECTS

...diagnosis and repair of finish defects, including contamination defects, including contamination defects, spray techniques defects, drying and curing problems, defects from improper preparation, environmental damage, and paint film failures.

10-405-122 AUTO COLL DAMAGE ANALYSIS

...vehicle construction, collision forces, structural damage analysis, measuring equipment, damage diagnosis and repair planning.

10-405-124 AUTO REFINISHING-ADVANCED

...advanced vehicle refinishing techniques including blending, tri-coat finishes, and custom painting.

10-405-126 AUTO COLLISION STRUCTURAL

...hydraulic pulling systems, pulling procedures, stress relieving, steel types, straightening procedures for front, rear, side, and roof damage, and frame and suspension alignment.

10-405-128 AUTO COLOR ADJUSTMENT AND TINT ...color theory, color movement, color adjustment and testing color match.

10-405-130 AUTO COLLISION SECTIONING

...full structural panel replacement guidelines and procedures, partial structural panel guidelines and procedures, sectioning joints required in the replacement of: quarter panels, front rails, rear rails, rocker panels, A-pillars, B-pillars, floor panels, and full body sectioning.

10-405-131 AUTO COLL REFINISHING OCC EXP

...utilize the program skills learned in the auto collision refinishing center environment. The student will be required to refinish vehicle damage with the skills learned to industry guidelines, and timelines.

10-405-132 AUTO COLLISION DAMAGE

REPORTS ...vehicle body construction, damage analysis, vehicle identification, reference manuals, and writing damage reports both manually and with the aid of a computer.

10-405-133 AUTO COLLISION REPAIR OCC EXP

...utilize the program skills learned in the auto collision center environment. The student will be required to repair vehicle damage with the skills learned to industry guidelines, and timelines.

10-442-144 AUTO COLLISION WELDING

...welding processes, machines and accessories, gas metal arc welding (wire), oxyacetylene cutting, welding and brazing, and gas tungsten arc welding.

10-442-146 ADVANCED WELD/COLL REPAIR

...advanced welding procedures necessary for an Auto Collision Repair Technician, including GTAW on aluminum along with GMAW on 1/8 inch thick or thicker steel.

10-602-110 MECHANICAL SERVICE-COLL

REPAIR ...automotive systems diagnostic, repair and adjustment procedures covering commonly effected areas of the automobile regularly repaired by an Auto Collision Technician.

10-602-117 WIRING/SCHEMATICS TECHNOLOGY

...electrical symbols, wiring diagrams, tracing wiring circuits, and diagnosing electrical problems with wiring diagrams, design an automotive electrical circuit.

10-602-118 DC ELECTRICITY TECHNOLOGY

...Ohms, amps, voltage, wire repair, series and parallel circuits, meter use, magnetism. Research paper comparing and contrasting A/C and D/C electrical applications.

10-602-119 AUTO COLLISION ELECTRONICS

...electrical circuit diagnosis, troubleshooting and repair of commonly effected circuits that an Auto Collision Technician will encounter.

Descriptions of courses not found on this page can be found in the back of the catalog.

Automotive Maintenance Technician Program Code 314043

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay and Marinette campuses. This diploma also fulfills the first year of the Automotive Technician Technical Diploma program offered in Green Bay. Admissions, registration, or counselor: (920) 498-5733 or (715) 735-9361. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

There are over 162 million automobiles and trucks on our highways. One out of every seven employed persons works in the manufacturing, distribution, maintenance, or commercial use of motor vehicles. Because of the greater emphasis on electronics and computer systems, many more trained persons will be required to maintain these vehicles. The Automotive Maintenance Technician program prepares students for job entry in an automotive service department.

Major emphasis is placed on realistic and practical shop applications.

- Ignition systems
- Emissions
- Brakes
- Charging and starting systems
- Suspension, 4-wheel alignment
- Fuel injection, fuel delivery systems
- Automotive Preventative Maintenance

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school background in mathematics, science, and industrial education classes

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a General Automotive Service Technician, Alignment Specialist, Preventive Maintenance Technician, Brake Specialist, or Service Writer.

GENERAL AUTOMOTIVE SERVICE

TECHNICIAN: diagnoses and locates troubles and makes the right parts replacements and adjustments on cars and light trucks.

ALIGNMENT SPECIALIST: does front and four wheel alignment using computerized alignment equipment.

PREVENTIVE MAINTENANCE TECHNICIAN: provides regularly scheduled maintenance per manufacturers' specifications.

BRAKE SPECIALIST: performs brake systems maintenance and component replacement.

SERVICE WRITER: meets and greets customers, listens to and records customer repair requests, and processes work orders for the automotive service technicians.

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

- Fleet Dispatcher
- Shop Supervisor
- Specialty Shop Owner
- Specialty Technician

CURRICULUM

The Automotive Maintenance Technician Technical Diploma is a one-year two-semester program. Upon graduation students will have completed 32 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-442-350	Welding-Machine Trades	2
31-801-385	Communicating-Writing	1
32-404-314	Automotive Brakes	5
32-404-315	Automotive Engine Performan	5
32-404-317	Automotive Wiring/Schematics	1
32-404-318	Automotive DC Electricity	1
32-404-360	Auto Tech Preparation	1
SEMESTER TOTAL		16

SECOND SEMESTER

31-801-386	Communicating Effectively	1
31-804-301	Math 1-Trades	2
32-404-324	Auto-Steering/Suspension	5
32-404-326	Auto-Chassis Electricity	2
32-404-327	Auto Performance 2	6
SEMESTER TOTAL		16

NOTE: A second year leading to a two year Automotive Technician Technical Diploma can be taken on the Green Bay campus.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

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.

32-404-314 AUTOMOTIVE BRAKES ...brake safety, wheel bearings, brake preventive maintenance, disc brake and drum brake overhaul, rotor and drum machining, master cylinder, brake lines and hoses, safety switches and valves, power and anti-lock brakes. (Corequisite: 32-404-360, Auto Tech Prep)

32-404-315 AUTOMOTIVE ENGINE

PERFORMANCE 1 ...engine theory, engine design, engine operation, purpose of ignition systems, distributor ignition systems, electronic ignition systems, ignition testing equipment, and ignition testing procedures. (Corequisites: 32-404-360, Auto Tech Prep; 32-404-318, Automotive DC Electricity)

32-404-317 AUTOMOTIVE WIRING/SCHEMATICS

...electrical symbols, wiring diagrams, tracing wiring circuits, and diagnosing electrical problems with wiring diagrams. (Prerequisite: 32-404-318, Automotive DC Electricity)

32-404-318 AUTOMOTIVE DC ELECTRICITY

...ohms, amperes, voltage, wire repair, series and parallel circuits, meter use, and magnetism.

32-404-324 AUTO-STEERING/SUSPENSION

...wheel bearings, four-wheel alignment, tires/wheels, shock absorbers/struts, front suspension, rear suspension, steering linkage, rack and pinion steering, recirculating ball steering gears, power steering pumps and frames/frame damage. (Corequisite: 32-404-360, Auto Tech Preparation)

32-404-326 AUTO-CHASSIS ELECTRICITY

...batteries, starting and charging system components, lighting system components, indicator system components, horn system components, motor driven system components. (Corequisites: 32-404-317, Automotive Wiring/Schematics; 32-404-318, Automotive DC Electricity)

32-404-327 AUTO PERFORMANCE 2 ...engine

fuel safety, fuel types ratings, fuel supply components, air induction components, fuel injection systems, exhaust systems, turbocharger, vehicle emissions, emission testing, computer input/output information and scanners. (Prerequisite: 32-404-315, Auto Engine Performance; Corequisite: 32-404-360, Auto Tech Prep)

32-404-360 AUTO TECHNICIAN PREPARATION

...personal safety, automotive lab equipment safety, vehicle repair order information, automotive industry computer applications, automotive repair tools, industry fasteners, automotive chemicals, vehicle preventive maintenance.

Descriptions of courses not found on this page can be found in the back of the catalog.

Automotive Technician

Program Code 324042

TECHNICAL DIPLOMA - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC. The first year of the program is also offered on the Marinette campus. Course information: (715) 735-9361. Toll free: (800) 422-NWTC.

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 shop environment.

Graduates of the Automotive Technician Program will be able to:

- Diagnose and repair automotive engine performance systems.
- Diagnose and repair automotive suspension and steering systems.
- Diagnose and repair automotive brake systems.
- Diagnose and repair automotive DC electrical systems.
- Diagnose and repair automotive electronic systems.
- Diagnose and repair automotive heating and air conditioning systems.
- Diagnose and repair automatic transmission/transaxles.
- Diagnose and repair general internal automotive engines.
- Diagnose and repair automotive manual drive train and axles.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school background in mathematics, science, and technology education

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Automotive Service Technician, Automotive Electronics Specialist, Engine Repair Specialist, Transmission and Drive Train Specialist, Alignment Specialist, Service Manager, Assistant Service Manager, Service Writer, or Brake Specialist.

AUTOMOTIVE SERVICE TECHNICIAN:

diagnoses and locates trouble, makes the necessary repairs, makes the right parts replacements and adjustments on cars and light trucks.

AUTOMOTIVE ELECTRONICS SPECIALIST:

diagnoses and locates problems, makes necessary repairs as related to engine body and transmission computer controls.

ENGINE REPAIR SPECIALIST: disassembles engines, inspects engine components, reassembles to factory specifications.

TRANSMISSION AND DRIVE TRAIN

SPECIALIST: diagnoses and locates problems, makes necessary repairs to automatic and standard transmissions and drive members.

ALIGNMENT SPECIALIST: diagnoses, makes repairs, and adjusts suspension using computerized alignment equipment.

SERVICE MANAGER or ASSISTANT SERVICE MANAGER: meets customers and works with the technicians to help diagnose and locate vehicle trouble areas.

SERVICE WRITER: meets and greets customers, listens to and records customer repair requests, processes work orders for the automotive service technicians.

BRAKE SPECIALIST: perform brake system maintenance and 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

CURRICULUM

The Automotive Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 64 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-442-350	Welding-Machine Trades	2
31-801-385	Communicating-Writing	1
32-404-314	Automotive Brakes	5
32-404-315	Automotive Engine Performan	5
32-404-317	Automotive Wiring/Schematics	1
32-404-318	Automotive DC Electricity	1
32-404-360	Auto Tech Preparation	1
SEMESTER TOTAL		16

SECOND SEMESTER

31-801-386	Communicating Effectively	1
31-804-301	Math 1-Trades	2
32-404-324	Auto-Steering/Suspension	5
32-404-326	Auto-Chassis Electricity	2
32-404-327	Auto Performance 2	6
SEMESTER TOTAL		16

THIRD SEMESTER

31-419-311	Hydraulics-Applied	2
32-404-335	Auto-Heating/Cooling AC	4
32-404-337	Auto-Electronics Computer	3
32-404-345	Auto-Engine Repair	5
32-806-353	Science-Mechanics	2
SEMESTER TOTAL		16

FOURTH SEMESTER

31-809-301	Social Science Survey	2
32-404-338	Automatic Trans/Transaxle	6
32-404-346	Auto-Manual Trans/Differ	4
32-404-347	Auto-Electronics/Manuf Spec	3
32-405-306	Auto Body Fundamentals	1
SEMESTER TOTAL		16

The Automotive Technician Program is ASE certified in all eight automotive program areas. All staff are ASE certified.

NOTE: The first year of this program is offered on both the Marinette and Green Bay campuses.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

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.

32-404-314 AUTOMOTIVE BRAKES ...brake safety, wheel bearings, brake preventive maintenance, disc brake and drum brake overhaul, rotor and drum machining, master cylinder, brake lines and hoses, safety switches and valves, power and anti-lock brakes. (Corequisite: 32-404-360, Auto Tech Prep)

32-404-315 AUTOMOTIVE ENGINE PERFORMANCE 1 ...engine theory, engine design, engine operation, purpose of ignition systems, distributor ignition systems, electronic ignition systems, ignition testing equipment, and ignition testing procedures. (Corequisites: 32-404-360, Auto Tech Prep; 32-404-318, Automotive DC Electricity)

32-404-317 AUTOMOTIVE WIRING/SCHEMATICS ...electrical symbols, wiring diagrams, tracing wiring circuits, and diagnosing electrical problems with wiring diagrams. (Prerequisite: 32-404-318, Automotive DC Electricity)

32-404-318 AUTOMOTIVE DC ELECTRICITY ...ohms, amperes, voltage, wire repair, series and parallel circuits, meter use, and magnetism.

32-404-324 AUTO-STEERING/SUSPENSION ...wheel bearings, four-wheel alignment, tires/wheels, shock absorbers/struts, front suspension, rear suspension, steering linkage, rack and pinion steering, recirculating ball steering gears, power steering pumps and frames/frame damage. (Corequisite: 32-404-360, Auto Tech Preparation)

32-404-326 AUTO-CHASSIS ELECTRICITY ...batteries, starting and charging system components, lighting system components, indicator system components, horn system components, motor driven system components. (Corequisites: 32-404-317, Automotive Wiring/Schematics; 32-404-318, Automotive DC Electricity)

32-404-327 AUTO PERFORMANCE 2 ...engine fuel safety, fuel types ratings, fuel supply components, air induction components, fuel injection systems, exhaust systems, turbocharger, vehicle emissions, emission testing, computer input/output information and scanners. (Prerequisite: 32-404-315, Auto Engine Performance; Corequisite: 32-404-360, Auto Tech Prep)

32-404-335 AUTO-HEATING/COOLING AIR CONDITIONING ...related system safety, engine cooling flushing/recycling, heating system components, refrigerants, clean air automotive A/C system, A/C test equipment, A/C evacuation recycling and recharging. (Corequisite: 32-404-360, Auto Tech Prep; Prerequisites: 32-404-317, Automotive Wiring/Schematics; 32-404-318, Automotive DC Electricity)

32-404-337 AUTO-ELECTRONICS COMPUTER ...knowledge and skill development related to computer controlled vehicle systems, ranging from chassis systems through extensive emphasis on engine performance and driveability related controls. (Prerequisite: 32-404-326, Auto-Chassis Electricity; Corequisite: 32-404-360, Auto Tech Prep)

32-404-338 AUTOMATIC-TRANSMISSION/TRANSAXLE ...transmission transaxle safety, transmission fluid, transmission maintenance, test procedures, external transmission adjustments, transmission removal, transmission overhaul, transmission electronic diagnostics. (Corequisite: 32-404-360, Auto Tech Prep; Prerequisites: 32-404-317, Automotive Wiring/Schematics; 32-404-318, Automotive DC Electricity)

32-404-345 AUTO-ENGINE REPAIR ...engine lubrication system, four stroke theory, valve timing, engine failures, valve service, cylinder head replacement, engine replacement, engine overhaul. (Corequisite: 32-404-360, Auto Tech Prep)

32-404-346 AUTO-MANUAL TRANSMISSION/DIFFERENTIAL ...drive train safety, universal joints, half-shafts, transmission repair/overhaul, clutch, shift linkage, four-wheel drive, differential. (Corequisite: 32-404-360, Auto Tech Prep)

32-404-347 AUTO-ELECTRONICS/ MANUFACTURERS SPECIFICATION ... GM-(CCC), electronic and port fuel injection; Ford-electronic engine control IV, carburetor, single and multipoint fuel injection; Chrysler-oxygen feedback, Bosch electronic fuel injection systems. (Prerequisite: 32-404-326, Auto-Chassis Electricity)

32-404-360 AUTO TECHNICIAN PREPARATION ...personal safety, automotive lab equipment safety, vehicle repair order information, automotive industry computer applications, automotive repair tools, industry fasteners, automotive chemicals, vehicle preventive maintenance.

32-405-306 AUTO BODY FUNDAMENTALS FOR AUTO MECHANICS...body construction, interior trim, interior mechanics, body alignment, wind noise and water leaks, plastic parts, glass replacement, and automotive paints.

Descriptions of courses not found on this page can be found in the back of the catalog.

Automotive Technology

Program Code 106023

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

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, management and organizational skills.

Graduates of the Automotive Technology Program will be able to:

- Diagnose and repair automatic transmission/transaxles.
- Diagnose and repair automotive heating and air conditioning systems.
- Diagnose and repair automotive manual drive train and axles.
- Diagnose and repair automotive brake systems.
- Diagnose and repair internal automotive engine components.
- Diagnose and repair automotive suspension and steering systems.
- Diagnose and repair automotive electrical system problems.
- Diagnose and repair automotive electronic engine control systems.
- Communicate effectively with the customer.
- Complete customer repair orders accurately.
- Organize a daily work schedule
- Tabulate a daily time sheet of technicians repair work

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Automotive Service Technician, Automotive Electronics Specialist, Engine Repair Specialist, Transmission and Drive Train Specialist, Alignment and Suspension Specialist, Service Writer, Shop Foreman, Service Manager, Parts Manager, Warranty Claims Person, or an Owner/Operator.

SHOP FOREMAN: Works with the technician and customer to get vehicles repaired correctly.

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

WARRANTY CLAIMS PERSON: Calculates the amount of time spent repairing a vehicle compared to what the manufacturer will allow.

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

Recommended off campus work experiences; 20 hours in each area;

- Automotive Service Writer
- Automotive Service Manager
- Automotive Shop Foreman
- Automotive Parts Manager
- Automotive Warranty Claims Person
- Automotive Service Department Manager
- Automotive Human Relations Manager
- Other areas with instructors approval

CURRICULUM

The Automotive Technology Associate Degree is a two-year, four semester program. Upon graduation, a student will have completed 72 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 10-602-114	Brake Technology	5
* 10-602-115	Engine Performance 1 Tech	5
**10-602-117	Wiring/Schematics Tech	1
**10-602-118	DC Electricity Technology	1
**10-602-160	Auto Preparation Technology	1
10-801-196	Oral/Interpers Communication	3
10-804-120	Math-Tech Algebra	3
SEMESTER TOTAL		19

SECOND SEMESTER

* 10-602-124	Steering/Suspension Tech	5
**10-602-126	Chassis Electricity Tech	2
* 10-602-127	Engine Performance 2 Tech	6
10-801-195	Communication-Written	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		19

THIRD SEMESTER

* 10-602-135	Heating/Cooling AC Tech	4
**10-602-137	Electronics Computer Tech	3
* 10-602-145	Engine Repair Technology	5
10-801-197	Reporting-Technical	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

* 10-602-138	Auto Trans/Transaxle Tech	6
* 10-602-146	Manual Transmission/Differ	4
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		16

SUGGESTED ELECTIVES:

10-602-147 Electronics Manufacturers Specifics;
10-102-158 Business-Introduction; 10-104-191 Customer Service Management.

NOTE: *A 3 to 5 page paper is required for each area experienced. The paper will include job title, work experience, responsibilities, normal work hours, and interpersonal skills required. Assess from your time on the job what possible classes and/or work experience would be beneficial to a person pursuing a job in this area. A grade in the work experience will be based on employer input and the paper.

NOTE: ** Specific project information to be obtained from program instructor.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-602-114 BRAKE TECHNOLOGY ...brake safety, wheel bearings, brake preventive maintenance, disc and drum brake overhaul, rotor and drum machining, master cylinder, brake lines and hoses, safety switches and valves, power and anti-lock brakes, *10 hours off campus selected work experience

10-602-115 ENGINE PERFORMANCE 1 TECHNOLOGY ...engine safety, preventive maintenance, four stroke theory, ignition systems, test equipment, scopes, *10 hour off campus selected work experience.

10-602-124 STEERING/SUSPENSION TECHNOLOGY ...steering and suspension safety, tire types and ratings, wheel bearings, balance and alignment, wheel and tire runout, shocks, suspension components, steering components, steering gears, *10 hour off campus work experience.

10-602-127 ENGINE PERFORMANCE 2 TECHNOLOGY ...engine fuel safety, fuel types and ratings, fuel supply components, air induction components, fuel injection systems, exhaust systems, turbocharger, vehicle emissions, emission testing, computer input/output information and scanners, *10 hour off campus selected work experience.

10-602-135 HEATING/COOLING AC TECHNOLOGY ...related system safety, engine coolant flushing/recycling, heating system components, refrigerants, A/C systems, A/C test equipment, A/C evacuation recycling and recharging, *10 hour off campus work experience.

10-602-138 AUTO TRANS/TRANSAXLE TECHNOLOGY ...transmission/transaxle safety, transmission fluid, transmission maintenance, pressure tests, external adjustments, transmission removal, transmission overhaul, *10 hour off campus selected work experience.

10-602-145 ENGINE REPAIR TECHNOLOGY ...engine lubrication system, four stroke theory, valve timing, engine failures, valve service, cylinder head replacement, engine replacement, engine repair, *10 hour off campus selected work experience.

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Business Administration Credit

Program Code 101041

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Business Administration Credit prepares learners for a career in credit management. The learners will comprehend the concepts of leadership, demonstrating promotion, control, and collection of consumer and business transactions.

Graduates of this program will be able to:

- Perform basic finance math calculations.
- Operate a microcomputer word processing program.
- Analyze business and personal financial statements.
- Construct a personal financial statement.
- Use financial counseling techniques.
- Assess how economic policies and changes in the level of business activity affect the credit industry.
- Write credit related documents.
- Use an electronic spreadsheet computer program, such as Excel.
- Use a financial calculator.
- Lead individuals to accomplished tasks.
- Demonstrate state and federal laws.
- Evaluate a family's personal financial management decisions.
- Collect past-due bills and payments.
- Evaluate the performance of a credit department.
- Make credit decisions.
- Conduct credit investigations.
- Screen credit applications.
- Complete applications for credit accounts.
- Promote the use of credit by customers.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Credit Manager Trainee, Assistant Credit Manager, Credit Administrator, Collector, Personal Banker, Loan Officer, and Financial Planning Assistant.

CREDIT MANAGER TRAINEE: learns all phases of operating a financial institution or business credit department, usually in preparation for a management position.

ASSISTANT CREDIT MANAGER: assists a branch or department manager in all phases of operation, including the extension, collection, and control of credit.

CREDIT ADMINISTRATOR: supports the credit process in the application of cash receipts, collection calls, and problem resolution.

COLLECTOR: 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.

FINANCIAL PLANNING ASSISTANT: aids financial planner in areas such as stocks, bonds, treasury bills, and other investments. May need additional course work in areas of securities.

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

- Credit Manager
- Bank Officer
- Investment Advisor

CURRICULUM

The Business Administration Credit Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 69 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-101-110	Accounting 1	4
10-103-103	Micro Basics MS Office 1	3
10-104-113	Credit-Consumer	3
10-801-195	Communication-Written	3
10-804-101	Math-Business	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-102-101	Financial Applications	3
10-102-150	Law-Business	3
10-102-153	Finance-Personal	3
10-104-114	Credit-Business	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-102-160	Law-Credit	3
10-102-165	Collection Methods	2
10-102-172	Financial Statement Analy	3
10-104-121	Credit Management Practices	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-102-122	Financial Inst-Mktg	3
10-102-174	Financial Counseling Tech	3
10-104-144	Credit Management Seminar	3
10-104-146	Credit Internship	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		18

SUGGESTED ELECTIVES: Accounting 2 (10-101-120), Abnormal Psychology (10-809-173)

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-102-122 FINANCIAL INSTITUTIONS-MARKETING ...fundamental concepts of marketing and the application of these concepts; as financial institutions enter the electronic era, effective marketing will be critical in determining the course of the industry.

10-102-150 LAW-BUSINESS ...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.

10-102-153 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.

10-102-160 LAW-CREDIT ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy.

10-102-165 COLLECTION METHODS ...classes of debtors, collection laws, pre-legal and legal methods used in collections, bad check collections, and skip tracing.

10-102-174 FINANCIAL COUNSELING TECHNIQUES ...assessing financial condition, identifying causes of financial problems, establishing solutions/goals, conducting telephone and in person sessions for consumers and businesses.

10-104-113 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.

10-104-114 CREDIT-BUSINESS ...credit in the economy, business credit, management and analysis of commercial credit, basis of decision-making, financial statement analysis and interpretation, credit and collection policies, international trade credit, and control of credit operations.

10-104-121 CREDIT MANAGEMENT PRACTICES ...manager's responsibilities/environment, planning, problem solving, organizational structure/cultures, staffing/human resources, leadership/teamwork, motivational techniques, communications, management controls, ineffective performers, and ethical business practices.

10-104-144 CREDIT MANAGEMENT SEMINAR ...case problems, research, and presentations related to credit administration, credit control, collections, marketing, effective management elements, and management functions.

10-104-146 CREDIT INTERNSHIP ...internship or field observations, career exploration, self exploration, career planning, and career placement. Course should be taken during the last semester.

Descriptions of courses not found on this page can be found in the back of the catalog.

Civil Engineering Technology

Program Code 106071

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Graduates of this 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.

- Students will understand operating systems, spreadsheets, word processing, CAD and other software products to efficiently perform assignments in an engineering office environment.
- Students will be able to solve engineering, surveying, and materials testing problems using algebra, trigonometry, and calculus.
- Students will be capable of performing design and routine testing procedures related to construction materials. These materials include soils, Portland cement concrete, and asphalt concrete.
- 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 layout various civil engineering projects.
- The student will understand and be able to describe different methods of building construction and elements of inspection and construction documentation.
- The student will be capable of producing written and oral reports related to work within the industry and learn techniques to adapt to the work environment.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school background in mathematics, science, and drafting
- Algebra and Trigonometry skills
- Attendance at orientation or a planned meeting with program staff is required.

MATH LEVEL

Students must have mastered algebra and trigonometry skills and have completed or tested out of Algebra/Trigonometry, course 10-804-130, before taking the following First Semester program courses

- Soil Mechanics
- Surveying/Mapping

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Civil Construction Inspector, Civil Drafter, Civil Soils-Materials Technician, and Survey Technician.

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, asphalt, concrete, aggregate, and other construction materials; and identifies and classifies 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 station, data collectors, transits, theodolites, distance measurement equipment, global positioning systems, and other surveying instruments following approved surveying practices.

The program also meets the educational requirements to become a Licensed Land Surveyor in the State of Wisconsin.

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

- Civil Engineer
- Construction Superintendent
- Building Inspector
- Civil Designer
- Construction Project Manager
- Surveyor

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

Some four-year colleges accept credits from the program for students wishing to pursue Baccalaureate degrees in related fields.

CURRICULUM

The Civil Engineering Technology- Associate Degree is a two-year plus 1 summer, five-semester program. Upon graduation, a student will have completed 72 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-606-112	Engineering Applications	1
10-606-113	CAD	2
10-607-119	Civil Drafting Technology	2
10-607-121	Surveying/Mapping	3
10-607-128	Soil Mechanics	3
10-804-131	Math-Algebra/Inter	3
10-806-150	Physics 1-Technical	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-607-102	Land Surveying/Computer Appl	1
10-607-111	Cemented Aggregate Mixtures	3
10-607-125	Civil Public Works Construct	2
10-801-195	Communication-Written	3
10-804-132	Math-Geometry/Analytic	3
10-806-160	Physics 2-Technical	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-607-131	Surveying 2	4
10-607-134	Surveying-Drafting	3
10-607-135	Statics/Strength Matl-Civil	4
10-801-196	Oral/Interpers Communication	3
10-804-170	Math 3-Tech Calculus	4
SEMESTER TOTAL		18

FOURTH SEMESTER

10-607-147	Water Technology	3
10-607-150	Land Surveying Law	2
	OR	
10-607-151	Highway Surveying	2
	OR	
10-607-152	Construction Meth/Bldg Syst	2
	OR	
10-607-153	Global Positioning Systems	2
10-801-197	Reporting-Technical	3
10-809-199	Psychology-Human Rel	3
	Elective	2
	Elective	2
	Elective	2
SEMESTER TOTAL		17

FIFTH SEMESTER

10-607-190	Civil Engineering Internshp	2
SEMESTER TOTAL		2

ELECTIVES: Students should take 3 of the 4 following electives; Highway Surveying Technology (10-607-151), Global Positioning Systems (10-607-180), Land Surveying Law 2 (10-607-163), and Construction Methods and Building Systems (10-607-152).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

These courses provide the opportunity for the student to develop the knowledge, skills, and understanding of:

10-606-112 ENGINEERING APPLICATIONS

...basics of a computer system, computer terminology, Windows NT, Microsoft Word, Microsoft Excel, and AutoCAD.

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: 10-606-112, Engineering Applications; 10-606-119, Sketching-Technical)

10-607-102 LAND SURVEYING/COMPUTER

APPL...overview of Sokkia Map Vista mapping software for applications in land surveying for mapping, contouring and calculations.

10-607-111 CEMENTED AGGREGATE MIXTURES

...inspection/testing concepts, material sampling procedures, aggregate properties, Portland cement concrete mix design methods, bituminous concrete mix design, field laboratory quality control testing. ACI Grade 1 field certification. American Concrete Institute Grade I Field Testing Technician Certification is available through this course. (Prerequisite: 10-607-128, Soil Mechanics)

10-607-119 CIVIL DRAFTING TECHNOLOGY

...the architecture, engineering, and construction industry; fundamentals of drafting; measurement, scaling, and dimensioning; multi-view drawings; and design 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. (Prerequisite: 10-804-130, Algebra/Trigonometry; Corequisite: 10-106-113, CAD))

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, Computer Aided Drafting; 10-607-121, Surveying and Mapping)

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. Use and transporation of portable nuclear density gauges certification available. (Prerequisite: 10-804-130, Algebra/Trigonometry) Certification in the use and transfer of portable nuclear density gauges is available through this course.

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. (Prerequisite: 10-607-127, Pubic Works Construction)

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 SOKKIA software in map preparation drawings. (Prerequisite: 10-607-131, Surveying 2)

10-607-135 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. (Prerequisite: 10-804-132, Geometry-Analytic; 10-806-150, Physics 1-Technical)

10-607-147 WATER TECHNOLOGY ...hydraulics, closed piping systems, open channel flow, sanitary/storm sewer systems, wastewater, hydrology, and water supply. (Prerequisites: 10-804-131, Algebra-Intermediate; 10-806-150, Physics 1-Tech)

10-607-150 LAND SURVEYING LAW ...history of property law, laws of evidence, unwritten rights, adverse possession, research and planning for a boundary survey, apportionment for land and water boundaries, and ethics of a land surveyor. (Prerequisite: 10-607-134, Surveying-Drafting)

10-607-151 HIGHWAY SURVEYING

TECHNOLOGY ...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: 10-607-111, Cemented Aggregate Mixtures; 10-607-127, Public Works Construction)

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. (Prerequisite: 10-607-131, Surveying 2)

10-809-199 PSYCHOLOGY-HUMAN RELATIONS

...decision-making, conflict resolution, learning strategies, growth and adjustment, social psychology, diversity, motivation, psychological theories and disorders, stress, career analysis, lifespan development, and personal/professional relationships.

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Computer Numeric Control (CNC) Technician

Program Code 324441

TECHNICAL DIPLOMA - TWO YEARS

Offered at the Green Bay campus. For more information, call the Green Bay campus at (920) 498-5440 or (800) 422-NWTC Ext. 54440.

PROGRAM DESCRIPTION

A second year of advanced CNC (Computer Numerical Control) machining for graduates of the Machine Tool Operation program.

Graduates of the Machine Tool Operation Program will be able to:

- Control multiple axis CNC machines.
- Use efficient production set up techniques.
- Use advanced CNC programming techniques
- Control optional features on CNC machines.
- Design and construct jigs and fixtures
- Program 3-D surface machining operations
- Use precision measuring practices

PROFILE OF INCOMING STUDENTS

- Like to work with numbers
- Accurate with numbers
- Problem solver
- Critical thinker
- Like to organize information
- Able to work with and meet deadlines

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a CNC Technician/Programmer Operator, Jig and Fixture Apprentice/Trainee, Machinist Apprentice/Trainee, and Manufacturing Engineering Technician.

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

CURRICULUM

The CNC Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-420-304	CNC Fundamentals-I	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-347	Cutting Tool Technology	1
31-420-348	Precision Measurement	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		17

SECOND SEMESTER

31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-420-358	CNC Set-Ups	1
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-386	Communicating Effectively	1
31-804-302	Math 2-Trades	1
SEMESTER TOTAL		17

THIRD SEMESTER

31-442-350	Welding-Machine Trades	2
31-804-303	Math 3-Trades	1
32-420-301	Tool Making	4
32-420-303	Tooling Design	2
32-420-332	CNC Fundamentals 3	2
32-420-335	CNC Turning Operation	3
32-420-336	CNC Machining Center Oper	3
SEMESTER TOTAL		17

FOURTH SEMESTER

31-809-301	Social Science Survey	2
32-420-305	Machine Applications-Advanced	4
32-420-307	Machining Theory-Advanced	2
32-420-308	Metrology	1
32-420-342	CNC Fundamentals 4	2
32-420-346	CNC Techniques 1-Advanced	3
32-420-347	CNC Techniques 2-Advanced	3
SEMESTER TOTAL		17

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-420-304 CNC FUNDAMENTALS-I ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines.

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.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw 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.

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.

31-420-348 PRECISION MEASUREMENT ...how to read/measure English and metric, rules, squares, surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement.

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers.

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathe operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers.

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.

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dia. offsets, boring bars, and bar feeding.

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.

31-442-350 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.

32-420-301 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.

32-420-303 TOOLING DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process.

32-420-305 MACHINE APPLICATIONS-ADVANCED ...maintain/set-up/operate CNC wire/RAM EDM machines, simulate high-speed machining processes, apply superabrasive tooling, 4th axis milling operations, 3 axis turn/mill/drill applications, 3-D surface machining.

32-420-307 MACHINING THEORY-ADVANCED ...electrical discharge machining (EDM), high speed machining concepts, rapid setup and quick change over procedures, abrasive waterjet, abrasive flow, chemical machining, laser and plasma, palletizing systems.

32-420-308 METROLOGY ...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.

32-420-332 CNC FUNDAMENTALS 3 ...CNC production planning, advanced 2-D mill programming, 3-D surface programming for CNC milling, conversational and G-code programming for milling machines, and computer assisted CNC programming for milling operations. (Prerequisites: 31-420-320, CNC Theory 2; 31-420-321, CNC Practice 2)

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.

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.

32-420-342 CNC FUNDAMENTALS 4 ...CNC process modeling, 4th axis indexing, advanced CNC lathe programming, 4th axis CNC wire EDM programming, and CNC fabrication punch/burner programming applications. (Prerequisite: 32-420-332, CNC Fundamentals 3)

32-420-346 CNC TECHNIQUES 1-ADVANCED ...workholding, cutting tools, and toolholders; productivity improvement; programmable tailstock operation; bar feeder operation; live tooling and c-axis control; advanced programming techniques.

32-420-347 CNC TECHNIQUES 2-ADVANCED ...special CNC control techniques, use of canned cycles, special programming functions, 3D surface machining, production machining.

Descriptions of courses not found on this page can be found in the back of the catalog.

Criminal Justice - Corrections

Program Code 105042

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Students relate theory to current practice trends, problems, and issues. Criminal justice students study correctional counseling, sociology, and security.

Graduates of the Criminal Justice - Corrections Program will be able to:

- 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 juvenile detention officer.
- Be eligible to become a state certified jail officer.
- Apply basic math skills.
- Demonstrate keyboarding and computer skills.
- Employ telecommunicator skills (dispatching).
- STUDENTS SEEKING CERTIFICATION

CAN ALSO:

- Apply principles of subject control.
- Implement jail fire safety.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- Good writing and communication skills
- Strong organizational skills

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Correctional Officer, Youth Care Worker, and Detention Worker.

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.

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.

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

- Adult/Juvenile Administrator
- Institutional Case Worker/Social Worker
- Probation/Parole Agent
- Youth Counselor/Case Aide
- Youth Detention Home Supervisor

NOTE: Students should be aware that a previous criminal record will limit their opportunity to gain successful entry-level employment.

CURRICULUM

The Criminal Justice - Corrections Associate Degree is a two-year, four-semester program. Upon graduation a student will have completed 65 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-106-145	Keyboarding	1
10-504-116	Criminal Justice-Intro	3
10-504-122	Correctional Admin	3
10-504-155	Corrections-Community	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-504-123	Correctional Inst	3
10-504-133	Correctional Sociology	3
10-504-172	Criminology	3
10-801-195	Communication-Written	3
10-804-152	Math-Protective Services	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-103-102	Microsoft Off-Word/Access	2
10-504-131	Criminal Justice Interviews	3
10-504-132	Courts/Jurisdiction	3
10-801-170	Writing-Protective Services	2
10-801-198	Speech	3
	Elective	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-504-145	Corrections Law	3
10-504-146	Probation/Parole	3
10-504-147	Correctional Security	3
10-504-154	Youth-Chng Community	3
	Elective	3
SEMESTER TOTAL		15

SUGGESTED ELECTIVES: Narcotics and Vice Investigation (10-504-151), Scientific Crime Laboratory (10-504-143), and Law Enforcement Internship (10-504-176), Juvenile Delinquent Abuse/Neglect (10-504-170).

Electives required for State certification are: Principles of Subject Control (POSC) Training (10-504-178) and Jail Health Care & Fire Safety (10-504-179).

A student must successfully complete 15 credits from the program before he/she is eligible to take the following certification requirement courses: Principles of Subject Control (10-504-178) and Jail Health Care & Fire Safety (10-504-179).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-504-122 CORRECTIONAL ADMINISTRATION

...chain of command, roles of the correctional supervisor, administrative structures, current management practices and problems, personnel needs, organizational theories, mission goals, policy making, inmate discipline, and report writing.

10-504-123 CORRECTIONAL INSTITUTION

...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.

10-504-131 CRIMINAL JUSTICE INTERVIEWS

...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.

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.

10-504-133 CORRECTIONAL SOCIOLOGY

...inmate adjustment process, informal organizations, responsibilities of a correctional officer, adult/juvenile admission processes, supervision of "special" inmates, suicide prevention, juvenile detention operations, juvenile release processes, and stress.

10-504-145 CORRECTIONS LAW ...laws, rules, and standards affecting jails, Federal and State Court systems, criminal and civil actions, criminal sentences, plea bargaining, community-based sanctions, sentencing statutes and guidelines, prisoner rights, and inmate litigation.

10-504-146 PROBATION/PAROLE ...criminal

justice system, probation and parole, types of offenses, sentencing process, presentence investigation, revocation procedures, alternatives to incarceration, parole board functions, Parole Officer responsibilities, and guidelines for releasing inmates.

10-504-147 CORRECTIONAL SECURITY ...inmate

security control, inspections, movements, counts; resident protection, privacy, safety, searches, contraband, restraints, equipment; building security; detection devices; legal aspects; personnel protection; building clearing; hostage negotiations; and pad subduing techniques.

10-504-154 YOUTH-CHANGING COMMUNITY

...juvenile delinquency; historical development controlling children, gangs, family, endangered children; legal requirements of handling juveniles; discipline of juveniles; supervision of juveniles; and community-based programs.

10-504-155 CORRECTIONS-COMMUNITY

...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.

10-504-172 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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Criminal Justice - Law Enforcement

Program Code 105041

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counsel, (920) 498-5733. Course information (920) 498-5543. Toll free: (800) 422-NWTC.

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.

Graduates of the Criminal Justice -Law Enforcement Program will be able to:

- Qualify for entry level positions in protective services.
- 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.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- Good writing and communication skills
- Strong organizational skills

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Wisconsin Firearms Law (s.s.941.29, possession of a firearm) requires a completed criminal background check in order to successfully complete course number, 10-504-177, Firearms Training. Based upon results of the criminal background check, a student may be denied enrollment in this course.

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as a Police Officer, Deputy Sheriff, DNR Officer, State Trooper, Military Law Enforcement Officer, Private Investigator, Security Guard, or Correctional Officer.

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 businesses and industry.

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

NOTE: A student must successfully complete 15 credits of specific courses within the program before being eligible to take the following certification requirement course: Defensive & Arrest Tactics (10-504-175).

A student must successfully complete 30 credits of specific courses within the program before being eligible to take the following certification requirement courses: Firearms (10-504-177) and EVOC/First Responder (10-504-174).

NOTE: DAAT is not a necessary pre-requisite for EVOC. Must have 30 transcripted credits.

CURRICULUM

The Criminal Justice - Law Enforcement Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-106-145	Keyboarding	1
10-504-111	Police Org / Admin	3
10-504-112	Police Patrol Procedures	3
10-504-116	Criminal Justice-Intro	3
10-801-196	Oral / Interpers Communication	3
10-804-152	Math-Protective Services	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-103-102	Microsoft Off-Word / Access	2
10-504-140	Criminal Investigation	3
10-504-170	Juvenile Delinquent Abuse/Negl	3
10-801-195	Communication-Written	3
10-801-198	Speech	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-504-120	Criminal Law	3
10-504-131	Criminal Justice Interviews	3
10-504-132	Courts / Jurisdiction	3
10-801-170	Writing-Protective Services	2
10-806-151	Science-Police	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-504-121	Law / Control-Traffic	3
10-504-142	Arrest / Search / Seizure	3
10-504-143	Crime Lab-Scientific	3
10-504-144	Police-Community Rel	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		18

SUGGESTED ELECTIVES: Narcotics and Vice Investigation (10-504-151), Juvenile Delinquency and Youth Crime (10-504-154), Security-Retail/Industrial (10-504-150), Telecommunicator-Public Safety (47-555-410), and Law Enforcement Internship (10-504-176).

This program is fully eligible for financial aid.

All Corrections Science core courses are also recommended electives. Electives required for State certification are: 1) EVOC Driving/First Responder Medical Training (10-504-174), 2) Defense & Arrest Tactics (DAAT) Training (10-504-175), and 3) Firearms Training (10-504-177).

NOTE: A Department of Justice, Law Enforcement Standards Board directive requires that a successful, negative drug test be completed prior to the first enrollment in any of the series of courses necessary for Law Enforcement Officer Certification. Those courses are: 1) EVOC/First Responders (10-504-174), 2) Defense & Arrest Tactics Training (10-504-175), and 3) Firearm Training (10-504-177).

COURSE DESCRIPTIONS

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

10-504-111 POLICE ORGANIZATION/

ADMINISTRATION ...structure of police departments, policies, procedures, behaviors, tasks, and goals; officer's role, ethics, discretion, and decision making in a democratic society; administrative concepts of leadership, management, and organizational principles.

10-504-112 POLICE PATROL PROCEDURES

...types of patrol and philosophy, concepts, and functions; types of calls and procedures; information gathering and reporting; patrol responsibility at crime scenes; courtroom procedures; and community relations.

10-504-116 CRIMINAL JUSTICE-INTRODUCTION

...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-120 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.

10-504-121 LAW/CONTROL-TRAFFIC

...fundamentals of evaluating the traffic law; process of issuing traffic citations and investigating and completing traffic accident reports; the process for safe traffic stops: low and high risk.

10-504-131 CRIMINAL JUSTICE INTERVIEWS

...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.

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.

10-504-140 CRIMINAL INVESTIGATION

...principles of criminal investigation; focus on techniques of an investigation from the preliminary investigation interview, evidence procedures, and specific crime investigation.

10-504-142 ARREST/SEARCH/SEIZURE

...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.

10-504-143 CRIME LABORATORY-SCIENTIFIC

...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: 10-504-140, Criminal Investigation)

10-504-144 POLICE-COMMUNITY RELATIONS

...history of community policing, community, police, problem-solving policing, interpersonal skills, diversity, citizens with disabilities, elderly, youth, gangs, victims/witnesses, media, and community police programs.

10-504-170 JUVENILE DELINQUENCY

ABUSE/NEGLECT ...as it relates to the field officer and the application of the law as it relates to juveniles in these situations.

Descriptions of courses not found on this page can be found in the back of the catalog.

Dental Assistant

Program Code 315081

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Dental Assistant Program trains students to prepare patients for treatment, sterilize instruments, and assist the dentist at chairside.

Graduates of the Dental Assistant program will be technically proficient and able to:

- Assist with chairside procedures.
- Manipulate dental materials.
- Perform laboratory duties.
- Execute infection control/universal precaution techniques.
- Prepare to treat various dental patients.
- Perform Radiographic/Imaging Techniques/ Processing.
- Maintain inventory.
- Perform receptionist/front office duties.
- Maintain dental equipment.

Students will be required to purchase personal protection equipment/ clothes, pay for liability insurance for dental clinical experience courses, provide their own transportation to the dental office, and attend a two-day dental convention in Chicago or Milwaukee.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- An acceptable level on required entrance tests
- High school diploma or equivalency or youth option student
- Computer or keyboarding skills
- Medical and dental examinations satisfactorily completed before entering the program
- A science background with emphasis in Advanced Biology and Anatomy and Physiology is desirable

Students are required to complete an American Heart Association Health Care Provider CPR Course prior to the first Clinical Experience. Hepatitis vaccination is recommended prior to first clinical course.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

The program prepares graduates to work with dentists as they examine and treat patients. Dental assistants with documented skills also may carry out a variety of laboratory, clinical and office duties. Some dental assistants manage the office and are responsible for patient scheduling and bookkeeping functions. Most dental assistants work in general or specialty dental offices, either for individual dentists or for groups of dentists. Some dental assistants may choose to 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

SCHOLARSHIPS: The Brown-Door-Kewaunee Dental Society, the Northeast Wisconsin Dental Assistant Association, and the NWTC Dental Assistant Program offer four scholarships: (2) \$500.00, (1) \$225.00, and (1) \$150.00, to students in the Dental Assistant program. Criteria include financial need, grade point average, and attendance. NWTC also has other scholarships available to students.

CURRICULUM

The Dental Assistant Technical Diploma is a one-year, three-semester program. Upon graduation a student will have completed 31 credits.

INTODUCTORY SEMESTER

A non-traditional semester offered in June, August & January to students accepted into the Dental Assistant program and high school seniors applying to the Dental Assistant program.

Course No.	Description	Credits
31-508-309	Dental/Pers Relationship	1
31-508-325	Dental Asst Clin Infect Ctrl	1
31-508-328	Dental Office Med Emergency	1
SEMESTER TOTAL		3

FIRST SEMESTER

Course No.	Description	Credits
31-508-310	Dental Science-Biomedical	2
31-508-311	Dental Asst 1-Chairside	4
31-508-312	Dental Materials	4
31-508-313	Radiography 1-Dental Asst	2
31-508-318	Dental Clinic Exp 1	2
SEMESTER TOTAL		14

SECOND SEMESTER

31-105-303	Dental Office Mgmt	1
31-508-322	Dental Clinic Exp 2	2
31-508-324	Dental Lab Procedures	3
31-508-326	Dental Asst 2-Chairside	4
31-508-329	Radiography 2-Dental Asst	2
SEMESTER TOTAL		12

May be taken at any time prior to graduation.

31-801-385	Communicating-Writing	1
31-801-386	Communicating-Interpers	1
TOTAL		2

NOTE: Students must have a C average to graduate from the Dental Assistant Program. Students who do not meet this requirement would have to repeat courses with a below C grade to graduate.

CERTIFICATION: Graduates of the program are eligible to take the national certification offered by the Dental Assisting National Board (DANB), (312) 642-3368. The Dental Assistant program is accredited by the American Dental Association-Commission on Dental Accreditation

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-105-303 DENTAL OFFICE MANAGEMENT

...uses of a dental computer program, appointment control, records management, recall programs, fees, payment plans, collections, and insurance.

31-508-309 DENTAL/PERSONAL RELATIONSHIPS

...history, the dental team, ethics, jurisprudence, risk management, nutrition, and personal improvement; psychology of management skills; and the importance of working as a team.

31-508-310 DENTAL SCIENCE-BIOMEDICAL

...immunology, oral embryology, various pathogenic and nonpathogenic micro-organisms, and oral pathology.

31-508-311 DENTAL ASSISTANT 1-CHAIRSIDE

...dental office components, infection control procedures, instruments transfer, oral evacuation, 4/6 handed dentistry, instrument identification, tray set-ups, oral health, dental dam application, rotary and handpiece identification. (Prerequisite: Accepted into Dental Assistant
Corequisites: 31-508-312, Dental Materials; 31-508-325, DA Clinical Infection Control)

31-508-312 DENTAL MATERIALS ...dental material properties, lab infection control and hazardous material handling, impression materials, care of lab and operating equipment, gypsum products, restorative and preventive materials, and tray set-ups.

31-508-313 RADIOGRAPHY 1-DENTAL

ASSISTANT ...introduction to exposing, processing, mounting, and evaluation of radiographs, darkroom maintenance and radiation protection and safety. Course also includes charting, oral and dental anatomy, morphology, embryology, and histology. (Prerequisites: 31-508-309, Dental/Personal Relationship; 31-508-325, Dental Assistant-Clinical Infection Control)

31-508-318 DENTAL CLINICAL EXPERIENCE 1

...practical experience in patient relations, chairside skills, dental materials and limited radiography in various dental offices and the on-campus clinic. (Corequisites: 31-508-310, Dental Science Biomedical; 31-508-311, Dental Asst 1-Chairside; 31-508-312, Dental Materials; 31-508-313, Radiography 1-Dental Assist; 31-508-328, Dental Office Medical Emergencies)

31-508-322 DENTAL CLINICAL EXPERIENCE 2

...advanced practical experience in patient relations, chairside skills, laboratory procedures, radiography, dental materials, specialties, emergency procedures, and business office operations in the dental office and the on-campus clinic. (Corequisites: 31-508-324, Dental Lab Proc; 31-508-326, Dental Asst 2-Chairside; 31-508-329, Radiography 2-Dental Asst)

31-508-324 DENTAL LABORATORY PROCEDURES

...taking and pouring of impressions, model trimming, denture and crown/bridge prosthesis, construction of acrylic trays, temporary restorations, mouth guards and bleaching trays, impressions materials and waxes, and surgical dressings. (Prerequisite: 31-508-312, Dental Materials; Corequisite: 31-508-326, Dental Assistant 2-Chairside)

31-508-325 DENTAL ASSISTANT CLINICAL INFECTION CONTROL/SAFETY COMPLIANCE

...disease transmission, hazard communication management, disinfection/treatment room and sterilization/instrument care.

31-508-326 DENTAL ASSISTANT 2-CHAIRSIDE

...occupational health and safety, management and maintenance of dental office and inventory, coronal polishing, fluoride application, prevention and operative dentistry, periodontics, oral surgery, orthodontics, pediatrics, and special patients. (Prerequisite: 31-508-311, Dental Assistant 1-Chairside; Corequisite: 31-508-524, Dental Lab Procedures)

31-508-328 DENTAL OFFICE MEDICAL

EMERGENCIES ...prevention, recognition and treatment of medical emergencies in the dental office as well as patient health history, vitals, airways, resuscitation equipment, emergency kits, and an overview of pharmacology. (Corequisite: 31-508-309, Dental/Personal Relationships)

31-508-329 RADIOGRAPHY 2-DENTAL ASST

...radiation theory, safety procedures, dental exposure techniques, evaluation techniques, and clinical application. (Prerequisite: 31-508-313, Radiography 1)

Descriptions of courses not found on this page can be found in the back of the catalog.

Dental Hygienist

Program Code 105081

ASSOCIATE DEGREE - TWO YEARS PLUS ONE SUMMER

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Dental Hygienist program prepares students to perform oral prophylaxis, apply preventive agents, expose radiographs, and teach patients oral care. Graduates of the Dental Hygienist program will be able to:

- Discern and manage the ethical issues of dental hygiene practice.
- Acquire and synthesize information in a critical, scientific, and effective manner.
- Provide planned educational services using appropriate interpersonal communication skills and educational strategies.
- Initiate and assume responsibility for health promotion and disease prevention activities for diverse populations.
- Systematically collect, analyze, & accurately record baseline data on the general, oral, and psychosocial health status of clients.
- Discuss condition of oral cavity, identify actual and potential problems, etiological and contributing factors and record alternative treatment.
- Provide treatment that includes preventive and therapeutic service designed to promote and maintain oral health and assist client in achieving goals.
- Evaluate effectiveness of planned clinical and educational services and modify as necessary.

Students will be required to purchase uniforms and instruments and pay for liability insurance for dental clinical courses.

MATH LEVEL

Students should have mastered basic math skills and Accuplacer tests for Algebra. For a description of basic math, see the Basic Education section of this catalog.

NOTE: A student who does not meet the above requirements should consult an NWTC counselor about ways to make up any deficiencies through testing or course work. Advance Standing Test Out is available in Radiography and Dental Materials.

EMPLOYMENT POTENTIAL

Prior to licensure as a Registered Dental Hygienist, a student is required to pass the Dental Hygiene National Board Examination and a Regional Practical Examination. A Registered Dental Hygienist may practice dental hygiene in a city, county, or multi-county health department; private practice, hospital, long term care facility, or school; or in dental sales.

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

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students.

Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- A minimum standard composite score of 20 on the ACT assessment
- One year of biology
- One year of chemistry taken within the last five years with a grade of C or better
- Grades of C or better in the science courses
- One year of algebra and advanced math or an 80% satisfactory score on the NWTC mathematics placement test
- Orientation before entering the program
- Medical and dental examinations satisfactorily completed within three months before entering the program
- Complete an American Heart Association Health Care Provider CPR course prior to program entry; maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.
- Two (2) or Three (3) credits of post high school general nutrition with a grade of C or better

Applications will be processed when requirements have been completed.

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

CURRICULUM

The Dental Hygienist Associate Degree is a two-year, one-summer, five-semester program. Upon graduation a student will have completed 71 credits.

SUMMER SEMESTER

Course No.	Description	Credits
* 10-806-163	Chemistry-Bioorganic	3
* 10-806-182	Anatomy/Physiology 1-General	3
SEMESTER TOTAL		6

FIRST SEMESTER

* 10-508-114	Dental Hygiene-Pre Clin	2
* 10-508-115	Dental Hygiene-Pre Clin/Lec	2
* 10-508-116	Histology/Embryology	1
* 10-508-117	Occupational Safety/Health	1
* 10-508-118	Anatomy-Head/Neck	3
* 10-806-183	Microbiology-Dental	4
* 10-806-187	Anatomy/Physiology 2-General	3
SEMESTER TOTAL		16

SECOND SEMESTER

* 10-508-112	Radiography	3
* 10-508-113	Periodontology 1	1
* 10-508-120	Dental Hygiene 1-Clinic	2
* 10-508-121	Dental Materials	2
* 10-508-124	Dental Hygiene 1-Clinic/Lec	2
* 10-508-132	Pathology-General Oral	3
10-801-195	Communication-Written	3
SEMESTER TOTAL		16

THIRD SEMESTER

* 10-508-123	Periodontology 2	2
* 10-508-134	Dental Hygiene 2-Clinic	3
* 10-508-136	Dental Hygiene 2-Clinic/Lec	1
* 10-508-142	Dental Health-Community	2
10-801-196	Oral/Interpers Communication	3
* 10-806-185	Pharmacology	2
	Elective	3
SEMESTER TOTAL		16

FOURTH SEMESTER

* 10-508-144	Dental Hygiene 3-Clinic	3
* 10-508-146	Dental Hygiene 3-Lecture	2
10-801-198	Speech	3
10-809-196	Sociology-Intro	3
10-809-198	Psychology-Intro	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES:

Dental Hygiene National Board (10-508-172).

NOTE: No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue in or graduate from this program. If the course is segmented, the successful retake must occur before continuing the sequence.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-508-112 RADIOGRAPHY ...radiographic techniques; principles of radiography with emphasis on radiation safety, radiobiology, darkroom techniques, anatomical landmarks, radiographic interpretation. (Prerequisites: 10-508-118, Anatomy-Head/Neck; 10-508-114, Dental Hygiene-Pre Clinical)

10-508-113 PERIODONTOLOGY 1 ...anatomy, histology, physiology of the alveolar bone; periodontal ligament, gingiva, cementum; and evaluation of the periodontium in healthy and diseased state. (Prerequisite: 10-508-114, Dental Hygiene-Pre Clinical; Corequisite: 10-508-112, Radiography)

10-508-114 DENTAL HYGIENE-PRE CLINIC/LAB ...personal oral hygiene, operation and maintenance of dental equipment, infection control techniques, assessment of medical records, oral examination, instrumentation, polishing, and instrument sharpening. (Prerequisite: Accepted into Dental Hygienist)

10-508-115 DENTAL HYGIENE-PRE CLINIC/LECTURE ...professional ethics, personal oral hygiene, operation and maintenance of dental equipment, infection control, medical records, oral examination, instrumentation, polishing, and instrument sharpening. (Prerequisite: Accepted into Dental Hygienist)

10-508-116 HISTOLOGY/EMBRYOLOGY ...basic cell structures; embryologic development of the face and oral cavity; formation of teeth; bone eruption and exfoliation of teeth. (Prerequisite: Accepted into Dental Hygienist)

10-508-117 OCCUPATIONAL SAFETY/HEALTH ...prevention, recognition, and response to medical emergencies; occupational health and safety in accordance with OSHA mandates and CDC guidelines; epidemiology; prevention of transmissible diseases; and chemical hazard communication. (Prerequisites: 10-806-163, Chemistry-BioOrganic; 10-806-182 Anatomy & Physiology 1)

10-508-118 ANATOMY-HEAD/NECK ...dental terminology; tooth development, function, and form; permanent and primary dentitions-individual tooth characteristics; occlusal classification; periodontium; oral cavity structure; musculature of the head and neck; bones of the skull; blood, nerve supply, and lymphatic system for the head and neck; dental charting. (Corequisites: 10-508-114, Dental Hygiene-Pre Clinical; 10-508-115, Dental Hygiene-Pre Clinical/Lecture; 10-508-116, Histology/Embryology)

10-508-120 DENTAL HYGIENE 1-CLINIC ...application and practice of exposure control; hazard communication; dental examinations; dental hygiene assessments; treatment planning, interventions, evaluations, and medical emergencies in the clinical setting. (Prerequisite: 10-508-114, Dental Hygiene-Pre Clinical)

10-508-121 DENTAL MATERIALS ...sources, properties, application, and manipulation techniques of dental materials; emphasis on characteristics of dental materials and their impact within the oral environment. (Prerequisites: 10-508-114, Dental Hygiene-Pre Clinical; 10-508-117, Occupational Safety/Health)

10-508-123 PERIODONTOLOGY 2 ...examination, planning, implementation, and evaluation of client periodontal status; approach to therapy, maintenance, and epidemiology of periodontal disease; emphasis on the relationship of periodontics to the practice of dental hygiene. (Prerequisite: 10-508-113, Periodontology 1)

10-508-124 DENTAL HYGIENE 1-CLINIC/LECTURE ...treatment planning, caries process, fluoride therapy, sonic/ultrasonic scaling, oral health maintenance and disease control, air-brasive polishing, tooth hypersensitivity, pedodontic dental care, and dental hygiene history. (Prerequisite: 10-508-115, Dental Hygiene-Pre Clinical/Lecture)

10-508-132 PATHOLOGY-GENERAL ORAL ...nature of disease, variants of normal; inflammation; immunity, regeneration, and repair; developmental disorders; cysts, neoplasia, genetic disorders; and oral manifestations of systemic diseases. (Prerequisite: 10-508-114, Dental Hygiene PreClinical; Corequisite: 10-508-120, Dental Hygiene 1-Clinical)

10-508-134 DENTAL HYGIENE 2-CLINIC ...application of assessments, treatment, and prevention planning; advanced clinical skills including root surface debridement, ultrasonic scaling, and radiographic techniques; patient counseling techniques; special needs patients. (Prerequisite: 10-508-120, Dental Hygiene 1-Clinical)

10-508-136 DENTAL HYGIENE 2-CLINIC/LECTURE ...theory of establishing patient relationships, patient counseling techniques, patient compliance, behavioral change strategies, designing a personalized prevention plan, smoking cessation, dental hygiene care for special needs patients. (Prerequisites: 10-508-113, Periodontology 1; 10-508-120, Dental Hygiene 1-Clinical)

10-508-142 DENTAL HEALTH-COMMUNITY ...principles of public health dentistry relevant to current issues; student participation in assessment, planning, implementation, and appraisal of community dental health programs. (Prerequisite: 10-508-120, Dental Hygiene 1-Clinical)

10-508-144 DENTAL HYGIENE 3-CLINIC ...advanced instrumentation, root planing skills, use of oral irrigation devices, preparation for the CRDTS Practical Exam. (Prerequisite: 10-508-134, Dental Hygiene 2-Clinical)

10-508-146 DENTAL HYGIENE 3-LECTURE ...local anesthesia, dental specialties, legal relationships in dental hygiene practice, interview techniques, preparation for State Certification Exam, temporomandibular dysfunction, implant client, modified ultrasonics. geriatric dental hygiene. (Prerequisite: 10-508-136, Dental Hygiene 2-Clinical/Lecture)

Descriptions of courses not found on this page can be found in the back of the catalog.

Diesel and Heavy Equipment Technician Program Code 324121

TECHNICAL DIPLOMA - TWO YEARS

Offered at the Sturgeon Bay campus. Admissions, registration, counselor, or course information: (920) 743-2207, Toll free: (800) 422-NWTC, Ext. 4900.

PROGRAM DESCRIPTION

Prepares students to service and repair diesel powered equipment. Instruction covers repair of steering, brakes, hydraulic systems, and chassis components.

Graduates of this program will be able to:

- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine fundamentals.
- Describe the mechanics of track drive systems.
- Perform required preventive maintenance.
- Use welding and machine tools.
- 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.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

The Diesel and Heavy Equipment Technician is employed in a variety of work environments. These include heavy equipment, truck, agriculture, marine, engine rebuilding, and specialty shops.

A graduate of the program will have the potential for employment as Construction Equipment Technician, Engine Technician, Farm Equipment Technician, Fuel Injection Technician, Service Technician, or Truck Driver/Diesel Technician.

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

CURRICULUM

The Diesel and Heavy Equipment Technician Technical Diploma is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation students will have completed 64 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-804-301	Math 1-Trades	2
32-107-351	PC Operations-Intro	1
32-412-300	Diesel-Lab Operations	1
32-412-310	Diesel Engine Fundamentals	6
32-412-311	Diesel-Elect Fundamentals	4
32-442-352	Welding-Metal Working Proc	2
SEMESTER TOTAL		16

SECOND SEMESTER

32-412-320	Diesel-Chassis/Susp/Steer	4
32-412-321	Diesel-Brake Systems	3
32-412-322	Diesel Preventive Maint	4
32-412-323	Diesel-Elect Systems	3
32-806-353	Science-Mechanics	2
SEMESTER TOTAL		16

THIRD SEMESTER

31-419-311	Hydraulics-Applied	2
32-412-324	Diesel-Electric Eng System	1
32-412-334	Diesel Engine Systems	4
32-412-336	Diesel-Mobile Hydraulic Sys	2
32-412-337	Diesel-Schematic Interpret	2
32-412-338	Diesel-Track Drive Systems	2
32-412-342	Diesel Equip Service/Maint	3
SEMESTER TOTAL		16

FOURTH SEMESTER

31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
31-809-301	Social Science Survey	2
32-412-340	Diesel Engine Troubleshoot	4
32-412-341	Diesel-Power Trains	5
32-412-345	Diesel-Refrig/AC	3
SEMESTER TOTAL		16

NOTE: The Caterpillar Foundation selected this technical program for participation in its Dealer Excellence Fund. Funds from Caterpillar and a matching grant from FABCO Equipment are used for student scholarships, staff development, curriculum development, and instructional equipment.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-419-311 HYDRAULICS-APPLIED ...hydraulic schematics, drive systems, hydraulic system diagnosis/troubleshooting, hydraulic circuits, piping, fluid mechanics, seals, packings, hydraulic component operation, and accumulators.

32-412-300 DIESEL-LAB OPERATIONS ...diesel shop safety, basic equipment operation, rigging and lifting, hand and precision tools, fasteners.

32-412-310 DIESEL ENGINE FUNDAMENTALS ...diesel engine theory, service tools, engine overhaul, lubrication, cooling intake and exhaust systems, bearings and seals, fuel systems, and engine trouble-shooting. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-311 DIESEL ELECTRICAL/ELECTRONIC FUNDAMENTALS ...electrical theory, electronic components, safety, storage batteries, charging circuits, and starting circuits. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-320 DIESEL-CHASSIS/SUSPENSION/STEERING ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-321 DIESEL-BRAKE SYSTEMS ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-322 DIESEL PREVENTIVE MAINTENANCE ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-323 DIESEL-ELECTRICAL/ELECTRONIC SYSTEMS ...safety, electronic terms, electronic components, and general electronic system diagnostics. (Prerequisites: 32-412-311, Diesel-Elect Fundamentals).

32-412-324 DIESEL-ELECTRIC ENGINE SYSTEM ...engine, drive train, chassis, and cab computer systems software.

32-412-334 DIESEL ENGINE SYSTEMS ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit diesel systems, Caterpillar systems, and testing methods. (Prerequisite: 32-412-310, Diesel Engine Fundamentals)

32-412-336 DIESEL-MOBILE HYDRAULIC SYSTEMS ...mobile hydraulics system components safety, principles of operation, diagnosis, and service. (Corequisite: 31-419-311, Applied Hydraulics)

32-412-337 DIESEL-SCHEMATIC INTERPRETATION APPLICATION ...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: 32-412-323, Diesel Electrical/Electronic)

32-412-338 DIESEL-TRACK DRIVE SYSTEMS ...track shop safety, track drive component parts, system operation, inspection, system diagnoses, system repair, system service, and system maintenance. (Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-340 DIESEL ENGINE TROUBLESHOOTING ...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: 32-412-310, Diesel Engine Fundamentals)

32-412-341 DIESEL-POWER TRAINS ...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. Corequisite: 32-412-300, Diesel-Lab Operations)

32-412-342 DIESEL EQUIPMENT SERVICE/MAINTENANCE ...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: 32-412-300, Diesel-Lab Operations)

32-412-345 DIESEL-REFRIGERATION/AIR CONDITIONING ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 32-412-300, Diesel-Lab Operations)

Descriptions of courses not found on this page can be found in the back of the catalog.

Dietary Manager

Program Code 303129

TECHNICAL DIPLOMA - ONE YEAR (WITH MULTIPLE ENTRY POINTS)

Part time for individuals employed in health care food service offered at the Green Bay campus, and available through the WTCN Network at Nicolet Area Technical College, Fox Valley Technical College, and Moraine Park Technical College. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Dietary Manager program prepares students to become competent food service/dietary managers for health care and other institutional facilities.

Graduates of the Dietary Manager program will be able to:

- Be employed as a Dietary Manager or in a food service setting.
- Analyze food service management procedures.
- Demonstrate principles of personnel supervision.
- Plan for nutritional care of patient/resident.
- Demonstrate safety and sanitation procedures for food services.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Complete program application
- High school diploma or equivalent
- Verification of employment in health care food service/ other institutional facility
- Verification of institutional employer participation in preceptorship

MATH LEVEL

Students should have mastered basic math skills before entering this program. For a description of basic math, see the Basic Education section of this catalog.

WTCN Shared Program with Fox Valley Technical College, Nicolet Area Technical College, and Moraine Park Technical College.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a dietary manager or food service supervisor in hospitals, long-term care facilities, school food service, retirement homes, and similar food service operations.

DIETARY MANAGER/FOOD SERVICE

SUPERVISOR: supervises food service personnel; food procurement, production, service, and storage; monitors business operations related to food service department; interprets nutritional information; plans and modifies general menus; assesses nutritional needs and care plans; utilizes services of a dietitian (consultant) as required for the development of therapeutic special diets, menus, and follow-through on patient nutritional needs.

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

- Certified Dietary Manager
- Dietetic Technician

CURRICULUM

The Dietary Manager Technical Diploma Program is a one-year program that includes five one-credit courses of 120 hours in conjunction with 36 weeks of related on-the job experience, including 150 hours of clinical field experience directly related to course content and learning activities.

Course No.	Description	Credits
30-312-301	First 10 week session (September) Dietary Manager-Personnel	1
30-312-303	Second 10 week session(December) Dietary Manager-Nutrition Care	1
30-312-302	Third 10 week session (March) Dietary Manager-Food Management	1
30-312-304	Dietary Manager (Sept. thru Jan.) Field Experience 1	1
30-312-305	Dietary Manager (Feb. thru May) Field Experience 2	1
CREDITS		5

CERTIFICATION: Completion of the program qualifies students to sit for the examination by the Dietary Manager Association to become a Certified Dietary Manager. The Dietary Manager Program is a part of the statewide curriculum administered by Milwaukee Area Technical College and accredited by the:

Dietary Managers Association
406 Surrey Woods Drive
St. Charles, IL 60174
(800)323-1908
www.dmaonline.org

This program is not eligible for financial aid.

COURSE DESCRIPTIONS

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

30-312-301 DIETARY MANAGER-PERSONNEL SUPERVISION ...procurement, production, storage of food supplies, hiring and supervising personnel, employment laws, evaluating employees, and discipline practices.

30-312-302 DIETARY MANAGER-FOOD SERVICE MANAGEMENT ...food service safety/sanitation, HACCP monitoring business operations communication, training, and employee motivation, coordinating department services and professional development and marketing department SVC.

30-312-303 DIETARY MANAGER-NUTRITION CARE ...interpreting nutritional information, calculating nutritional in-take, planning and modifying general menus, charting in medical records, care planning, and applying proper nutritional care based on disease status.

30-312-304 DIETARY MANAGER-FIELD EXPERIENCE 1 ...job responsibilities and assignments of the Dietary Manager including nutritional care and therapy, personnel supervision, nutritional assessment, and the management of food service, under the direction of a preceptor.

30-312-305 DIETARY MANAGER-FIELD EXPERIENCE 2 ...extended job responsibilities and assignments including nutritional care and therapy; personnel supervision, and nutritional assessment; and the management of food service under the direction of a preceptor.



Descriptions of courses not found on this page can be found in the back of the catalog.

Early Childhood Education

PROGRAM CODE 103071

ASSOCIATE DEGREE - TWO YEARS

Offered Online. For more Information, call the Green Bay campus at (920) 498-6866 or toll-free: (800) 422-NWTC, ext. 6866.

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-age 12. It is designed to provide students with the skills and knowledge necessary in the field of child development.

Graduates of the Early Childhood Education Program will be prepared to:

- Develop and implement curriculum for young children
- Design developmentally appropriate learning materials
- Organize learning environments based upon the needs of young children
- Understand and apply knowledge of child development and how children learn
- Maintain and promote safe and healthy play environments
- Value a diverse culture, model awareness, practice sensitivity and respect the backgrounds of children and their families
- Work cooperatively with other staff members, parents, and community resource people
- Understand and adhere to licensing regulations applicable to the industry

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information. Students must have:

- An interview or orientation prior to being accepted into the program
- A high school diploma or equivalency
- Demonstrated proficiency in basic skills through a course placement assessment
- Proper immunizations
- High School grade average of C or above grade requirement
- All students are required to complete 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.

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

NOTE: A STUDENT WHO DOES NOT MEET THE ABOVE REQUIREMENTS is required to consult an NWTC counselor about ways to make up any deficiencies through testing or course work.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Early Childhood Teacher in a group center, Family Childcare Provider-Teacher - Owner, Nanny, Head Start Teacher, Pre-Kindergarten Assistant Teacher at a Public/Private School, Child Care Center Supervisor/Manager, Assistant Director of an Early Childhood Program, Early Childhood Program Director, Child Care Center Administrator, and Owner of Childcare Center.

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, and guided activities.

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, providing customer service, and all human resource functions such as: hiring/firing, supervision, training and evaluation of staff.

FAMILY CHILDCARE PROVIDER/TEACHER/

OWNER: plans and implements comprehensive program for the child's total development with concern for child's health, safety, and welfare in a family/home environment.

FUTURE OPPORTUNITIES:

NWTC has formal program-to-program transfer agreements with the University of Wisconsin-Milwaukee, University of Wisconsin-Whitewater and University of Wisconsin-Parkside, which will give graduates an opportunity to obtain their baccalaureate degree.

CURRICULUM

The Early Childhood Education Associate Degree Program is a two-year program. Upon graduation, a student will have completed 70 credits. Courses are offered online.

FIRST SEMESTER

Course No.	Proposed New Description	Credits
10-307-103	Childhood-Early Intro	3
10-307-104	Child Growth/Development 1	3
10-307-105	Child-Health/Safety/Nutr	3
10-801-196	Oral/Interpersonal Communication	3
	Elective	3
SEMESTER TOTAL		15

SECOND SEMESTER

10-307-116	Creative Lrng Act Curr 1	3
* 10-307-117	Childhood-Early Practicum 1	3
10-307-118	Childhood-Early Seminar 1	1
10-307-119	Child Behavior-Guiding	3
10-809-198	Psychology-Introduction	3
SEMESTER TOTAL		13

THIRD SEMESTER

10-307-120	Childhood-Early Grow/Dev 2	3
10-307-121	Creative Lrng Act Curr 2	3
10-307-122	Childhood-Early Practicum 2	3
10-307-123	Childhood-Early Seminar 2	1
10-801-195	Communication-Written	3
SEMESTER TOTAL		13

FOURTH SEMESTER

10-809-196	Sociology-Introduction	3
10-307-132	Child-Differing Abilities	3
10-307-130	Childhood-Early Practicum 3	3
10-307-131	Childhood-Early Seminar 3	1
10-307-112	Infants/Toddlers-Caregivers	3
	Elective	3
SEMESTER TOTAL		16

SUMMER SEMESTER

10-307-133	Childhood-Admin Early Educ	3
10-809-195	Economics	3
10-307-135	Childhood-Early Prac/Prof 4	3
10-307-136	Childhood-Early Seminar 4	1
10-804-101	Math-Business	3
SEMESTER TOTAL		13

*It is necessary to show good health as evidenced by a medical examination within three months prior to beginning practicum class.

For further details, contact Sally Martin at (920) 498-6866.

SUGGESTED ELECTIVES: Infant Toddler-Group Care (10-307-113), Infant Toddler-Family/Society (10-307-114).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

These courses provide the opportunity for the student to develop the knowledge, skills, and understanding of:

10-307-103 CHILDHOOD-EARLY INTRO ...an introduction to the profession; examine types of early childhood education settings, history, legal and ethical responsibilities of childcare professionals.

10-307-104 CHILD GROWTH/DEVELOPMENT 1 ...child growth and development theories; analyze growth and development of children; domains of development; social, cultural, and economic influences on child development.

10-307-120 CHILDHOOD-EARLY GROWTH/DEVELOPMENT 2 ...physical, social, emotional, and cognitive domains of the infant, preschool child, and school-age child; developmental milestones and developmental issues; application to the early childhood classroom. (Pre-requisite: 307-104 Early Childhood Growth & Development 1)

10-307-105 CHILD-HEALTH/SAFETY/NUTRITION ...legal and ethical responsibilities of early childhood education professionals in providing for the health, safety and nutrition of young children; governmental regulations; safety of indoor and outdoor environments; universal precautions for routine care for children; emergency situations; health assessments; healthy food habits.

10-307-112 INFANTS/TODDLERS-CAREGIVERS ...principles for infant and toddler care; infant and toddler development; infant/toddler learning through routine care-giving activities; developmentally appropriate care that is respectful, responsive and reciprocal; standards for the health, safety and nutrition of infants and toddlers.

10-307-119 GUIDING CHILDREN'S BEHAVIOR ...positive guidance principles in the early childhood classroom; positive guidance strategies and adult behaviors that support those strategies; values, beliefs and behaviors that guide caregiver interactions with young children.

10-307-116 CREATIVE LEARNING ACTIVITIES CURRICULUM 1 ...creative learning activities; diversity and developmentally appropriate, bias-free curriculum including literature, music, art, and small and large muscle activities; techniques for teacher-made materials.

10-307-121 CREATIVE LEARNING ACTIVITIES CURRICULUM 2 ...continuum of Creative Learning Activities Curriculum 1; explore a wide variety of creative learning activities in all developmental domains; plan developmentally appropriate, bias-free curriculum for young children including literature, music, art, and small and large muscle activities, resource units, a variety of curriculum methods, observation and portfolio development on one child, parent/teacher conferences, selection of classroom materials and supplies, and classroom arrangement. (Prerequisite: 307-116 Creative Learning Activities 1)

CHILDREN-DIFFERING ABILITIES ...children with developmental differences; inclusion, identify developmental differences; practice the assessment and referral process; adapt learning environments and curriculum for children; identification of community resources and communicating with families with children with developmental differences.

10-307-133 CHILDHOOD-ADMINISTERING EARLY EDUCATION PROGRAM ...early childhood education program development and management; financial plans, staff, program philosophy, developmentally appropriate programs, policies, records, and opportunities for family involvement. (Prerequisite: Fourth semester status)

10-307-117 CHILDHOOD-EARLY PRACTICUM 1 ...hands-on experience working with young children in a childcare setting; observe and record children's behavior, integrate anti-bias strategies and develop learning plans to facilitate children's play by serving as a student teacher in an early childhood classroom. Learning occurs under the guidance of an experienced, cooperating teacher and an NWTC instructor. (Pre-requisite: Concurrent enrollment or previous completion of first semester classes)

10-307-122 CHILDHOOD-EARLY PRACTICUM 2 ...higher-level skills for observing and recording children's behavior, integrate anti-bias strategies and develop learning plans to facilitate children's play by serving as a student teacher in an early childhood classroom; communication and involvement strategies, tools and skills to use when communicating with families. This learning occurs under the guidance of an experienced, cooperating teacher and an NWTC instructor. (Prerequisite: 307-117 Early Childhood Practicum 1)

10-307-130 CHILDHOOD-EARLY PRACTICUM 3 ...higher-level skills for observing and recording children's behavior, integrate anti-bias strategies and develop learning plans to facilitate children's play by serving as a student teacher in an early childhood classroom; communication and involvement strategies, tools and skills to use when communicating with families. This learning occurs under the guidance of an experienced, cooperating teacher and an NWTC instructor. (Prerequisite: 307-117 Early Childhood Practicum 2)

10-307-135 CHILDHOOD-EARLY PRACTICUM/PROFESSIONALISM 4 ...serve as a classroom teacher in a childcare center or other Early Education Program. Higher-level skills for observing and recording children's behavior, integrate anti-bias strategies and develop learning plans to facilitate children's play by serving as a student teacher in an early childhood classroom. Professionalism in the early childhood education field; portfolio development. This learning occurs under the guidance of an experienced, cooperating teacher and an NWTC instructor. (Prerequisite: 307-130 Early Childhood Practicum 3 and Fourth semester status)

10-307-118 CHILDHOOD-EARLY SEMINAR 1 ...introduction to the early childhood classroom; investigate strategies and skills before entering the classroom. Discuss and problem solve with fellow classmates; analyze teaching/learning practices. (Co-requisite: Early Childhood Practicum 1)

10-307-123 CHILDHOOD-EARLY SEMINAR 2 ...reinforces the learning and increased skill level the student teacher gains in the early childhood classroom; practice strategies and skills before entering the classroom. Discuss and problem solve with fellow classmates; analyze teaching/learning practices. (Co-requisite Early Childhood Practicum 2)

10-307-131 CHILDHOOD-EARLY SEMINAR 3 ...reinforces the learning and increased skill level the student teacher gains in the early childhood classroom; analyze family involvement with the early childhood program; communication tools. Discuss and problem solve with fellow classmates; analyze teaching/learning practices. (Co-requisite Early Childhood Practicum 3)

10-307-136 CHILDHOOD-EARLY SEMINAR 4 ...reinforces the learning and increased skill level the student teacher gains in the early childhood classroom; advocate for families; family communication tools; staff development strategies; Discuss and problem solve with fellow classmates; analyze teaching/learning practices. (Co-requisite Early Childhood Practicum 4)

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Electrical Engineering Technology

Program Code 106621

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Electronic Engineering Technology prepares students to test, maintain and troubleshoot electrical and electronic devices as found in machinery, computers and communications. The EET grad will be able to transfer to a four year bachelors degree program in Electrical Technology.

Graduates of the Electrical Engineering Technology Program will be able to:

- Adhere to workplace safety standards.
- Communicate using common technical terminology and graphic symbology.
- Write a technical document.
- Develop an industry acceptable team-centered work ethic.
- Use office suite software package tools.
- Solve problems using algebra, trig, complex numbers, logarithms, exponentials and calculus.
- Relate mathematics to the field of electricity and electronics.
- Interpret graphical data.
- Measure electrical parameters in DC and wideband AC circuits.
- Apply circuit theorems to AC/DC RLC circuits.
- Apply boolean theorems to basic digital circuits.
- Describe transfer characteristics of frequency sensitive linear circuits.
- Manipulate formulas describing electrical/electronic phenomena.
- Predict operation of circuits containing active components.
- Describe the various digital modulation techniques.
- Identify characteristics of power electrical devices and circuits.
- Describe the assembly and interconnections of a microprocessor system.
- Use computer assembly language to program microprocessors and interface circuits.
- Operate microprocessor interface circuits.
- Describe wireless analog communication techniques.
- Analyze automatic electrical machine control circuits.
- Use tools for electrical/electronic test and assembly tasks.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see [Accuplacer](#).

First semester DC and Intermediate Algebra have 804-130, Algebra/Trig, as a prerequisite

MATH LEVEL

To complete the program in a minimum of 2 years, students must have satisfied or completed Algebra/Trig 804-130, before entering first semester. Other beginning courses require mastery of algebra skills. For a description of algebra skills see Basic Education.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Electrical/Electronic Development Technician, Electrical/Electronic Maintenance Technician, Electrical Test Technician, Electronics Technician, and Field Service Technician.

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 an 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.

With the additional education this transfer program affords 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

EARNING POTENTIAL: Graduates of the Electrical Engineering Technology Associate degree program have the potential to earn over \$50,000 per year after five years of work experience. Graduates who transfer and complete the four year Electrical Engineering Technology program can expect larger returns initially and larger lifetime earnings.

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-605-110	Tech Skills 1	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
10-801-195	Communication-Written	3
10-804-131	Math-Algebra/Inter	3
* 10-809-195	Economics	3
SEMESTER TOTAL		16

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: Transistor-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
10-660-115	Digital 6: Systems	1
10-801-197	Reporting-Technical	3
10-804-132	Math-Geometry / Analytic	3
10-806-150	Physics 1-Technical	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-605-124	Microprocessors 1	3
10-605-136	Electronics-Linear	3
10-605-137	Data Communications 1	3
10-662-112	DC / AC III	3
* 10-809-196	Sociology-Intro	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-605-144	Microprocessors 2	3
10-605-148	Analog Communications	3
10-605-150	Electricity-Power	3
10-662-124	Electronic Circuit Analysis	3
* 10-809-198	Psychology-Intro	3
	OR	
* 10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		18

* Taken in any order

SUGGESTED ELECTIVES: Electives to be completed in order to transfer to Bachelor's Degree: Calculus I (10-804-180), Calculus II (10-804-181).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-605-124 MICROPROCESSORS 1

...microprocessors using a microcontroller, assembly language programming and microprocessor architecture, digital information processing on the basic, machine level of a computer. (Prerequisites: 10-660-115, Digital 6 Systems; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-136 ELECTRONICS-LINEAR ...active and passive linear circuits including filters, resonant and impedance matching circuits, and linear amplifiers using BJT and FET active element. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-137 DATA COMMUNICATIONS 1

...circuits and principles in pulse amplitude, time, code modulation and delta modulation, sampling and noise effects using modulation techniques, and network concepts. (Prerequisites: 10-660-112, Basic Electronics 3: Op-Amps; 10-660-115, Digital 6:Systems)

10-605-144 MICROPROCESSORS 2

...programming and applying digital I/O and control devices: ADCs, DACs, Timers, Parallel interfaces, Serial Communication interfaces, and Interrupt handling. An extension of Microprocessors 1. (Prerequisite: 10-605-124, Microprocessors 1)

10-605-148 ANALOG COMMUNICATIONS

...modulation principles including AM, FM, and SSB; noise influence on receiving systems, antenna characteristics, radiating fields, and high frequency propagation in feedlines. (Prerequisite: 10-605-136, Electronics-Linear)

10-605-150 ELECTRICITY-POWER... the principles, analysis and applications of transformers, DC and AC machines and their control. Labs will illustrate characteristics of the devices using operating machines. (Prerequisite: 10-660-108, AC 2: Reactance)

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 1Logic)

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. (Corequisite: 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. (Prerequisite: 10-804-130, Algebra/Trigonometry; Corequisite: 10-804-131, Intermediate Algebra)

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. (Corequisite: 10-660-1004, 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 currents. (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. (Prerequisites: 10-660-106, DC 3: Circuit Theorems and 10-804-131, Algebra-Intermediate; Corequisite: 10-804-132, Geometry-Analytic)

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. (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)

10-660-115 DIGITAL 6: SYSTEMS

...interconnection of ALU, registers, memory, decoders, control and sequence logic, glue-logic, clock and I/O into a working system is studied in block and circuit form. (Corequisite: 10-660-114, Digital 5: Characteristics)

10-662-112 DC/AC III ... 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: 10-605-136, Electronics-Linear)

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Electrical Power Distribution

Program Code 314132

TECHNICAL DIPLOMA - ONE YEAR (Begins in June)

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Electrical Power Distribution prepares students to install, maintain, and operate electrical systems to supply electric energy to residential, commercial, industrial customers, and joint gas and electric underground generation facilities.

Graduates of the Electrical Power Distribution Program will be able to:

- Be knowledgeable in personal protective equipment to safely perform specific work
- Secure a (CDL) Commercial Driver's License
- Assist in the construction of electric transmission systems.
- Relate electrical theory to electric power systems.
- Work comfortably at heights.
- Climb poles and towers.
- 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

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- Be able to obtain a commercial driver's license
- Place satisfactorily in the NWTC mathematics examination

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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

CURRICULUM

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

FIRST SEMESTER (SUMMER)

Course No.	Description	Credits
31-413-330	Line Elec Field Trng 1	5
31-413-353	Electricity-Basic	1
31-413-362	Line Elec-Safety 1	1
31-804-310	Math-Algebra/Trades	2
SEMESTER TOTAL		9

SECOND SEMESTER

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
31-804-385	Math-Computer Appl	2
SEMESTER TOTAL		16

THIRD SEMESTER

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		7

This program is fully eligible for financial aid.

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. (Prerequisite: 31-413-337, Line Electrician Field Training 2-B)

31-413-335 LINE ELECTRICIAN-CONSTRUCTION STANDARDS ...distribution standards overhead, underground, primary, secondary, clearances, work practices, material and safe work practices.

31-413-336 LINE ELECTRICIAN FIELD TRAINING 2-A

...transformer installation, operation, maintenance; regulator, capacitor and OCR operation and maintenance. (Prerequisite: 31-413-330, Line Electrician Field Training 1)

31-413-337 LINE ELECTRICIAN FIELD TRAINING 2-B

...underground installation and equipment; street lighting operation and maintenance; protective equipment use; map/diagram reading, code clearance requirements; use of tree trimming methods and tools. (Prerequisite: 31-413-336, Line Electrician Field Training 2-A)

31-413-353 ELECTRICITY-BASIC ...basic electricity: fundamental laws and circuit analysis. (Prerequisite: 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

...substation construction and maintenance, first aid procedures, mouth-to-mouth resuscitation, safety code analysis, recordkeeping, external heart massage, and safety/accident analysis.

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 automotive equipment.

31-413-364 LINE ELECTRICIAN-SAFETY 2

...electrical section, line clearing, right-of-way maintenance; generating stations including theory and hands-on working on overhead lines; protective equipment; underground systems; tree trimming; and substations. (Prerequisite: 31-413-362, Line Electrician-Safety 1)

Descriptions of courses not found on this page can be found in the back of the catalog.

Electricity

Program Code 314131

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Electricity prepares students to install, maintain, and service electrical equipment used in residential, commercial, and industrial settings.

Graduates of the Electricity Program will be able to:

- 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 basic 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

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- Place satisfactorily in the NWTC mathematics and algebra examinations

MATH LEVEL

Students should have mastered high school algebra skills and have a desire to learn advanced algebra and trigonometry. For a description, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Construction Electrician, or Industrial Maintenance Electrician.

CONSTRUCTION ELECTRICIAN: installs and services conduit, wire, cable, and equipment in new and existing residential, commercial, and industrial structures.

INDUSTRIAL MAINTENANCE ELECTRICIAN: installs, maintains, and troubleshoots motors, motor controls, lighting, and other electrical systems in an industrial plant.

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

- Electrical Construction Supervisor
- Electrical Engineering Technician
- Journey-Level Electrician
- Electrical Contractor
- Electrical Maintenance Supervisor

Please visit the Electricity Program Web site at www.nwtc.edu

CURRICULUM

The Electricity Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 29 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-413-314	DC Circuits	2
31-413-316	Residential Elec Code 1	1
31-413-319	Residential Wiring 1	3
31-413-324	DC Machines	2
31-413-326	Residential Elec Code 2	1
31-413-329	Residential Wiring 2	3
31-801-385	Communicating-Writing	1
31-804-311	Algebra-Electricity	1
31-804-321	Trigonometry-Electricity	1
SEMESTER TOTAL		15

SECOND SEMESTER

31-413-334	AC Circuits	2
31-413-339	Industrial Controls	3
31-413-344	AC Machines	2
31-413-346	Commercial Elec Code	1
31-413-349	Electric Motor Control	3
31-413-359	Electrical Internship	1
31-442-331	Welding-Electricity	1
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		14

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-413-314 DC CIRCUITS ...the electron theory, voltage, current, resistance, power, Ohm's law, test equipment, conductors, and direct current circuits. (Corequisite: 31-804-311, Algebra-Electricity)

31-413-316 RESIDENTIAL ELECTRICAL CODE 1 ...general code requirements, plans and specifications, wiring methods.

31-413-319 RESIDENTIAL WIRING 1 ...safety, electrical code applications, box selection, wire selection, wire terminations, single-point lighting control, multiple-point lighting control, receptacles. (Corequisite: 31-413-316, Residential Elec Code 1)

31-413-324 DC MACHINES ...magnetism, electromagnetism, DC generators, DC motors, DC motor control. ((Pre-requisites: 31-413-314, DC Circuits)

31-413-326 RESIDENTIAL ELECTRICAL CODE 2 ...special purpose outlets, electrical service, home automation systems. (Prerequisite: 31-413-316, Residential Electrical Code 1)

31-413-329 RESIDENTIAL WIRING 2 ...layout and design, circuit determinations, cable installation, small appliance branch circuits, special purpose outlets, multi-wire circuits, low voltage wiring. (Pre-requisites: 31-413-319, Residential Wiring 1; Co-requisite: 31-413-326 Residential Electrical Code 2)

31-413-334 AC CIRCUITS ...sine wave, inductance, capacitance, series circuits, parallel circuits, power factor, three-phase circuits. (Prerequisite: 31-413-314, DC circuits; 31-804-321, Trigonometry-Electricity)

31-413-339 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control circuits, control logic, relays, types of control, control devices, time-delay control. (Prerequisite: 31-413-324, DC Machines)

31-413-344 AC MACHINES ...three-phase systems, transformers, alternators, three-phase motors, single-phase motors, electronic speed control. (Pre-requisites: 31-413-334, AC Circuits; 31-413-324, DC Machines)

31-413-346 COMMERCIAL ELECTRICAL CODE ...code requirements, plans and specifications, wiring methods, electrical service. (Prerequisite: 31-413-326, Residential Electrical Code 2)

31-413-349 ELECTRIC MOTOR CONTROL ...motor starters, overload relays, motor reversing circuits, motor starting methods, load devices, troubleshooting motor circuits, programmable controller hardware, programmable controller programming. (Pre-requisite: 31-413-339, Industrial Controls)

Descriptions of courses not found on this page can be found in the back of the catalog.

Electro-Mechanical Technology

Program Code 106201

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Electro-Mechanical Technology prepares students to assemble, install, troubleshoot, repair, and modify machinery and automated systems that are computer or electronically controlled.

Graduates of the Electro-Mechanical Technology Program will be able to:

- Understand and apply knowledge of electricity/electronics, mechanics, fluids, and computer software applications.
- Read and interpret technical specifications, 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 and operating test equipment and associated software.
- Perform assembly/disassembly, repair, or calibration of components by properly selecting tools and equipment and following procedures.
- Record and evaluate the characteristics and performance of machine components, assemblies, and systems.
- Understand the overall operation and control of machines and automated systems.
- Solve machine operation and control problems utilizing established troubleshooting methods and procedures.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

MATH LEVEL

To complete the program in 2 years, students must have satisfied or completed Algebra/Trig 804-130, before entering first semester. Other beginning courses require mastery of algebra skills. For a description of algebra skills see Basic Education.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Automated Equipment Technician, Electro-Mechanical Technician, Electronics Technician, Field Service Technician, Fluid Power Technician, and Installation Technician.

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 engineer 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

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-605-110	Tech Skills 1	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
10-801-195	Communication-Written	3
10-804-131	Math-Algebra/Inter	3
10-809-195	Economics	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-605-120	Tech Skills 2	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
10-660-111	Electronics 2: Transistor-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
10-660-115	Digital 6: Systems	1
10-801-197	Reporting-Technical	3
10-804-132	Math-Geometry / Analytic	3
SEMESTER TOTAL		16

THIRD SEMESTER

10-620-133	Transducers	3
OR		
10-605-152	Measurement-Temp/Level	3
10-620-134	Electromech-Rotating Equip	3
OR		
10-605-153	Instrumentation-Pneum	3
10-620-135	Fluid/Mechanical Systems	3
10-620-136	Computer/Machine Interface	3
10-801-196	Oral/Interpers Communication	3
Elective		3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-620-131	Electromechanical System	3
OR		
10-605-151	Control System Techniques	3
10-620-142	Fluid Control Mechanism	3
OR		
10-605-154	Measurement-Flow/Analy	3
10-620-148	Programmable Controls-Adv	3
10-809-199	Psychology-Human Rel	3
Elective		3
SEMESTER TOTAL		15

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-605-151 CONTROL SYSTEM TECHNIQUES

...electronic/digital control loops; schematic diagrams; measurement and transmission instruments; and final control devices concerned with the connecting, interaction, tuning, and troubleshooting of loops. (Prerequisites: 10-605-152, Measurement-Temperature Level; 10-605-153, Instrumentation-Pneumatics)

10-605-152 MEASUREMENTS-TEMPERATURE/LEVEL

...theory of measurement and its application to mechanical and electrical devices used in measuring level and temperature; ultrasonic transmitters; RTDs, thermocouples, and head measuring devices. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-153 INSTRUMENTATION-PNEUMATICS

...instrumentation diagrams, symbology, and mathematics; pressure measurement and compressed air systems; study of pneumatic transmitter, converter, and controller instruments as used in closed loop control. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-154 MEASUREMENTS-FLOW/ANALYTICAL

...theory of measurement as applied to mechanical and electrical devices used in obtaining flow and analytical measurements such as pH, consistency, humidity, conductivity, and viscosity. (Prerequisites: 10-605-152, Measurement-Temperature Level; 10-605-153, Instrumentation-Pneumatics)

10-620-131 ELECTROMECHANICAL SYSTEMS

...feedback control analysis applied to servomechanical systems, and motor speed drives. (Prerequisites: 10-620-133, Transducers; 10-620-134, Electromechanical-Rotating Equipment; 10-620-136, Computer/Machine Interface)

10-620-133 TRANSDUCERS ...basic theory, operation, and application of industrial transducers, sensors, and detectors; installation, maintenance, and interfacing of various transducers. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps; 10-660-115, Digital 6:Systems)

10-620-134 ELECTROMECHANICAL-ROTATING EQUIPMENT ...construction, characteristics, and operation of DC motors and AC motors; construction, operation, and set-up of motor drive systems. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps; 10-804-132, Geometry Analytic)

10-620-135 FLUID/MECHANICAL SYSTEMS

...basic theory and operation of hydraulic and mechanical components and systems. (Prerequisite: 10-804-132, Geometry Analytic)

10-620-136 COMPUTER/MACHINE INTERFACE

...development and use of computer graphics applied to the monitoring, supervision, and control of industrial machinery. (Prerequisites: 10-660-115, Digital 6:Systems; 10-804-132, Geometry Analytic)

10-620-142 FLUID CONTROL MECHANISMS

...theory, operation, and tuning of electro-hydraulic servovalve and proportional valve systems. (Prerequisites: 10-620-133, Transducers; 10-620-135, Fluid/Mechanical Systems)

10-620-148 PROGRAMMABLE CONTROLLERS 2

...advanced applications and programming of PLCs, with emphasis on the hardware and software needed to interface PLCs to industrial components and systems, including maintenance, installation, and specifications. (Prerequisites: 10-620-133, Transducers; 10-620-134, Electromechanical-Rotating Equipment; 10-620-135, Fluid/Mechanical Systems; 10-620-136, Computer/Machine Interface)

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

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Corequisite: 10-660-101, Digital 1:Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Corequisite: 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 Kirchhoff's Voltage Law are defined. (Prerequisite: 10-804-130, Algebra/Trigonometry; Corequisite: 10-804-131, Intermediate Algebra)

10-660-105 DC 2: CIRCUITS ...analysis of parallel and series-parallel circuits. Application of Kirchhoff's Current Law to parallel circuit combinations. Introduction of current sources and source conversions.

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 currents. (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. (Prerequisites: 10-660-106, DC 3: Circuit Theorems and 10-804-131, Algebra-Intermediate; Corequisite: 10-804-132, Geometry-Analytic)

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. (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)

Descriptions of courses not found on this page can be found in the back of the catalog.

Electronics

Program Code 106051

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Electronics prepares students to operate, test, maintain, and troubleshoot electronic equipment such as automatic control, computers, and communications equipment. It is also designed to prepare technicians to work with Electronic Research and Development engineers.

Graduates of the Electronics Program will be able to:

- Describe the various digital modulation techniques.
- Identify components of power switching devices and circuits.
- Evaluate power switching circuits.
- Program microprocessor interface circuits.
- Measure electrical parameters of RF circuits.
- Describe wireless analog communication techniques.
- Use computer assembly language.
- Measure wide-band circuit parameters.
- Describe transfer characteristics of frequency sensitive linear circuits.
- Analyze an ON/OFF machine control circuit.
- Describe the assembly and interconnections of a microprocessor system.
- 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 orally using common technical terminology.
- Write a technical document.
- Use office suite software package tools.
- Manipulate electronic formulas.
- Relate mathematics to the field of electronics.
- Interpret graphical data.
- Solve problems using algebra, trigonometry, complex numbers, logarithms, and exponentials.
- Use common test equipment to measure circuit parameters.
- Verify measured values.
- Machine code a processor.
- Adhere to laboratory safety standards.
- Operate microprocessor interface circuits.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

MATH LEVEL

To complete the program in 2 years, students must have satisfied or completed Algebra/ Trig 804-130, before entering first semester. Other beginning courses require mastery of algebra skills. For a description of algebra skills see Basic Education.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Electronic Development Technician, Electronic Maintenance Technician, Electronic Test Technician, Electronics Technician, and Field Service Technician.

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.

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

- Computer Field Service Supervisor
- Electronics Production Superintendent
- Electronics Maintenance Supervisor

EARNING POTENTIAL

Graduates of the Electronics program have the potential to earn over \$50,000 per year after five years of work experience.

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-605-110	Tech Skills 1	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
10-801-195	Communication-Written	3
10-804-131	Math-Algebra/Inter	3
10-809-195	Economics	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-605-120	Tech Skills 2	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
10-660-111	Electronics 2: Transistor-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
10-660-115	Digital 6: Systems	1
10-801-197	Reporting-Technical	3
10-804-132	Math-Geometry / Analytic	3
SEMESTER TOTAL		16

THIRD SEMESTER

10-605-124	Microprocessors 1	3
10-605-136	Electronics-Linear	3
10-605-137	Data Communications 1	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-605-144	Microprocessors 2	3
10-605-147	Data Communications 2	3
10-605-148	Analog Communications	3
10-605-149	Power Devices	3
	Elective	3
SEMESTER TOTAL		15

SUGGESTED ELECTIVES: Internship (10-605-195), CAD-Electron Tech (10-606-101), Math 3-Tech Calc (10-804-170).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-605-124 MICROPROCESSORS 1

...microprocessors using a microcontroller, assembly language programming and microprocessor architecture, digital information processing on the basic, machine level of a computer. (Prerequisites: 10-660-115, Digital 6 Systems; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-136 ELECTRONICS-LINEAR ...active and passive linear circuits including filters, resonant and impedance matching circuits, and linear amplifiers using BJT and FET active element. (Prerequisites: 10-660-109, AC 3:RLC Circuits; 10-660-112, Basic Electronics 3:Op-Amps)

10-605-137 DATA COMMUNICATIONS 1 ...circuits and principles in pulse amplitude, time, code modulation and delta modulation, sampling and noise effects using modulation techniques, and network concepts. (Prerequisites: 10-660-112, Basic Electronics 3: Op-Amps; 10-660-115, Digital 6:Systems)

10-605-144 MICROPROCESSORS 2 ...programming and applying digital I/O and control devices: ADCs, DACs, Timers, Parallel interfaces, Serial Communication interfaces, and Interrupt handling. An extension of Microprocessors 1. (Prerequisite: 10-605-124, Microprocessors 1)

10-605-147 DATA COMMUNICATIONS 2 ...RZ, NRZ, and Manchester encoding/decoding; principles of FSK, ASK, PSK, and noise effects on digital modulation; fiber optic principles, light, and a brief laser discussion. (Data Communications 1 extension.) (Prerequisite: 10-605-137, Data Communications 1)

10-605-148 ANALOG COMMUNICATIONS

...modulation principles including AM, FM, and SSB; noise influence on receiving systems, antenna characteristics, radiating fields, and high frequency propagation in feedlines. (Prerequisite: 10-605-136, Electronics-Linear)

10-605-149 POWER DEVICES ...use of power switching devices applied to switching systems such as power supplies, motor speed controls, power inverters and UPS systems; production of DC from line sources and the losses in switching devices; students will calculate and measure phase angles, voltages, currents and impedances using standard Ohm's Law concepts and laboratory measuring instruments. (Prerequisite: 10-605-136, Electronics-Linear)

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 1Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presetable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Corequisite: 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. (Prerequisite: 10-804-130, Algebra/Trigonometry; Corequisite: 10-804-131, Intermediate Algebra)

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. (Corequisite: 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 currents. (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. (Prerequisites: 10-660-106, DC 3: Circuit Theorems and 10-804-131, Algebra-Intermediate; Corequisite: 10-804-132, Geometry-Analytic)

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 CIRCUIS ...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. (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)

Descriptions of courses not found on this page can be found in the back of the catalog.

Emergency Medical Technician-Basic Program Code 305313

TECHNICAL DIPLOMA - ONE SEMESTER

Offered throughout the District. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Emergency Medical Technician-Basic students perform emergency patient care and basic life support in the field, transporting injured and ill patients to hospital emergency departments.

Graduates of the Emergency Medical Technician-Basic Program will be able to:

- 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

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Must be 18 years or older to enter training
- Satisfactory placement in the NWTC reading evaluation

EMPLOYMENT POTENTIAL

A graduate with an EMT-Basic Technical Diploma will have the potential for employment as an Emergency Medical Technician. Most ambulance services in Wisconsin are volunteer, but both private ambulance services and fire departments employ EMT's in full-time paid positions. Some hospital emergency departments also employ EMTs.

EMERGENCY MEDICAL TECHNICIAN: performs emergency patient care and basic life support in the field, transporting sick and injured patients to hospital emergency departments.

CURRICULUM

The EMT-Basic Technical Diploma is a one-semester program. Upon graduation a student will have completed 4 credits.

FIRST SEMESTER

Course No.	Description	Credits
30-531-310	EMT-Basic	4

SEMESTER TOTAL

4

This program is not eligible for financial aid.

COURSE DESCRIPTIONS

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

531-310 EMT-BASIC ...preparatory aspects, airway management, patient assessment, medical/behavioral cases, trauma care, pediatric cases, and field operations in basic life-support emergency medical care.

Emergency Medical Technician-IV

Program Code 305316

TECHNICAL DIPLOMA - ONE SEMESTER

Offered throughout the District. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

CURRICULUM

The EMT-IV Technical Diploma is a one-semester program. Upon graduation a student will have completed 2 credits.

FIRST SEMESTER

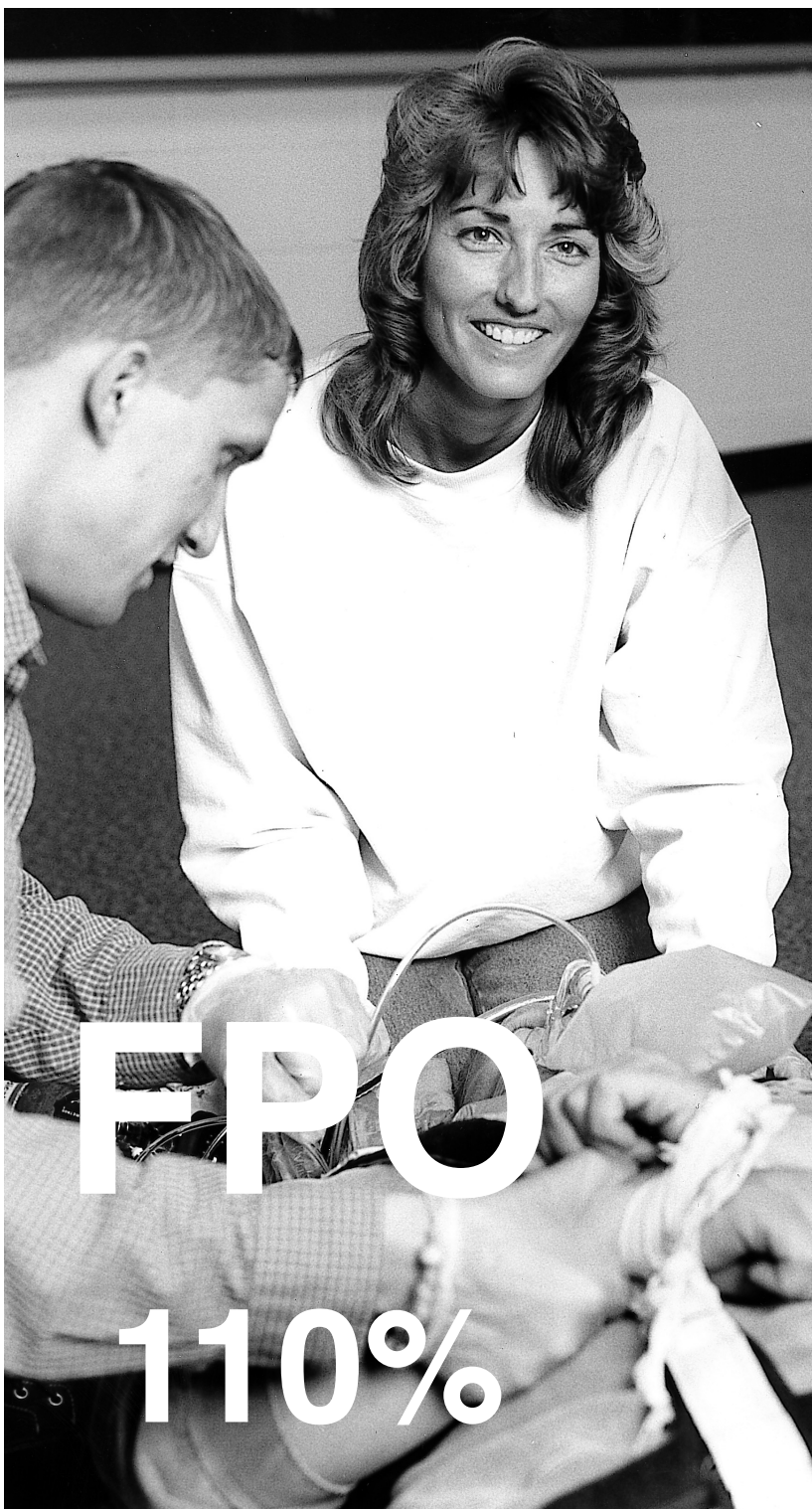
Course No.	Description	Credits
30-531-340	EMT IV Technician	2
SEMESTER TOTAL		2

This program is not eligible for financial aid.

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 EMT IV TECHNICIAN ...preparatory aspects, clinical decision-making, basic pharmacology, intravenous therapy, cardiovascular cases, diabetic cases, narcotic overdose cases and clinical skill competencies in EMT IV Technician level emergency medical care. **2 cr.**



Descriptions of courses not found on this page can be found in the back of the catalog.

Farm Business and Production Management

TECHNICAL DIPLOMA - SIX-YEAR, PART-TIME

Program Code 300901

Offered District-wide. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 732-3875. Information in Sturgeon Bay: (920) 746-4900. Toll free: (800) 422-NWTC.

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 farmer.

Graduates of the Farm Business and Production Management Program will be able to:

- 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

- 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
- Basic math defined as addition, subtraction, multiplication and division

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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

CURRICULUM

The Farm Business and Production Management Technical Diploma is a six-year, part-time program. Upon graduation a student will have completed 18 credits.

Course No.	Description	Credits
30-090-381	Farm Business Operation	3
30-090-382	Soils Management	3
30-090-383	Crop Mgmt	3
30-090-384	Livestock Nutrition	3
30-090-385	Livestock Mgmt	3
30-090-386	Farm Record/Busi Analy	3
SEMESTER TOTAL		18

This program is not eligible for financial aid.

Tuition assistance is available through the Wisconsin Dept. of Agriculture and the Wisconsin Technical College Categorical Funding Tuition Assistance Grant.

COURSE DESCRIPTIONS

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

30-090-381 FARM BUSINESS OPERATION ...farm organization; cash flow; financial statements and budgeting; credit needs; record keeping systems; business structure for farm operation; tax issues; farm business analysis; and decision making.

30-090-382 SOILS MANAGEMENT ...preparing and implementing a land use plan, soil testing procedures and reports, corrective fertilizers, soil conservation, safe use of farm machinery and equipment, and farm business analysis.

30-090-383 CROP MANAGEMENT ...economics, alternative crop strategies, production management, variety selection, maintenance fertilization, pest controls and chemicals, harvesting, storage, marketing, and farm business analysis.

30-090-384 LIVESTOCK NUTRITION ...sound feeding management; economics of feeds; nutritional terminology and requirements; feed consumption; feed tag labels for protein, energy, minerals, and vitamins; evaluate feeding programs; and metabolic diseases.

30-090-385 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.

30-090-386 FARM RECORD/BUSINESS ANALYSIS ...farm business goals, use of farm credit, farm business arrangements, orderly farm transfer, farm estate planning, farm income taxes, computer records, and farm business analysis.



Descriptions of courses not found on this page can be found in the back of the catalog.

Financial Institutions Management Program Code 101028

ASSOCIATE DEGREE - FIVE YEARS, PART-TIME WITH SHORTER OPTIONS AVAILABLE

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733.

Course information: (920) 498-5435. Toll free: (800)422-NWTC.

PROGRAM DESCRIPTION

Financial Institutions Management is designed for current or prospective employees of financial institutions seeking specialized training.

Graduates of this program will be able to:

- Perform business math calculations.
- Analyze business and personal financial documents.
- Ensure compliance with state and federal laws.
- Recommend appropriate financial products to customers.
- Use marketing tools and techniques.
- Manage the work of other people in a team environment.
- Assess the impact of economic trends on the financial industry.
- Use financial counseling techniques.
- Make loan decisions.
- Demonstrate knowledge and understanding of collection procedures.
- Deliver good customer service.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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.

The program was developed in coordination with the American Bankers Association

CURRICULUM

The Financial Institutions Management Associate Degree is a five-year, ten-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-102-151	Banking Principles	3
10-103-103	Micro Basics MS Office 1	3
10-804-101	Math-Business	3
SEMESTER TOTAL		9

SECOND SEMESTER

10-102-101	Financial Applications	3
10-102-122	Financial Inst-Mktg	3
SEMESTER TOTAL		6

THIRD SEMESTER

10-101-110	Accounting 1	4
10-104-113	Credit-Consumer	3
SEMESTER TOTAL		7

FOURTH SEMESTER

10-102-153	Finance-Personal	3
10-801-195	Communication-Written	3
SEMESTER TOTAL		6

FIFTH SEMESTER

10-102-150	Law-Business	3
10-801-196	Oral/Interpers Communication	3
SEMESTER TOTAL		6

SIXTH SEMESTER

10-102-160	Law-Credit	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		9

SEVENTH SEMESTER

10-102-180	Money/Banking	3
10-196-110	Supervision Principles	3
SEMESTER TOTAL		6

EIGHTH SEMESTER

10-102-125	Mortgage Lend/Serv	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		6

NINTH SEMESTER

10-102-155	Trust Functions/Service	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		6

TENTH SEMESTER

10-102-167	Commercial Lending	3
10-196-143	Diversity-Workplace	1
	Elective	3
SEMESTER TOTAL		7

SUGGESTED ELECTIVES: Financial Statement Analysis (10-102-172), Collection Methods (10-102-165), Accounting 2 (10-101-120), Credit Management Seminar (10-104-144), Financial Counseling Techniques (10-102-174).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-102-101 FINANCIAL APPLICATIONS ...use of financial calculators, checkbook records, purchasing systems, shipping /receiving systems, A/R systems, A/P systems, business loans, breakeven analysis, sales gain/loss, depreciation methods, inventory methods, and financial statement analysis.

10-102-122 FINANCIAL INSTITUTIONS-MARKETING ...fundamental concepts of marketing and the application of these concepts; as financial institutions enter the electronic era, effective marketing will be critical in determining the course of the industry.

10-102-125 MORTGAGE LENDING/SERVICING ...principles and practices involved in making and closing mortgage loans and servicing a sound mortgage portfolio, including the secondary mortgage market.

10-102-150 LAW-BUSINESS ...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.

10-102-151 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.

10-102-153 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.

10-102-155 TRUST FUNCTIONS/SERVICE ...trust functions; estate settlement; guardianships; trust services; performance of agencies, individuals, business organizations, charitable institutions; and trust administration.

10-102-160 LAW-CREDIT ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy.

10-102-167 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.

10-102-180 MONEY/BANKING ...economics and banking, commercial banking system, money supply, investments and loans, Federal Reserve System, and international monetary system.

10-104-113 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.

10-196-110 SUPERVISION PRINCIPLES ...supervisor's role, planning, problem solving, organizing/staffing/training/retraining employees, motivation, evaluating performance, challenging employees, teamwork, controlling work, discipline, productivity, quality, and diversity.

Descriptions of courses not found on this page can be found in the back of the catalog.

Fire Protection Engineering Technology Program Code 105033

ASSOCIATE DEGREE - TWO YEARS

Offered at the Marinette campus or with the first year at the Green Bay campus under the 1 + 1 Program. Admissions, registration, or counselor and course information: (715) 735-9361 or (920) 498-5733. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Fire Protection Engineering Technology teaches students to design, install, and service automatic sprinkler, fire alarm, and special hazard fire suppression systems.

Graduates of the Fire Protection Engineering Technology Program will be able to:

- Analyze developments in the fire protection field.
- Produce fire protection drawings.
- Use written, technical, and oral presentations.
- Design fire protection systems.
- Use construction blueprints.
- Evaluate automatic sprinkler systems.
- Evaluate fire protection hazards.
- Troubleshoot electrical components of fire protection systems.
- Compare manual and automatic fire extinguishing systems and agents.
- Arrange fire detection, alarm, and control devices.
- Design automatic fire sprinkler systems.
- Test to NICET Level II in at least one subfield.
- Design special hazards systems.
- Observe how fire protection is viewed by the general public.
- Assemble systems cost information.
- Install, service, and inspect fire protection systems.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Fire Protection Systems Designer, Fire Protection Equipment Sales Representative, Fire Protection Systems Installer, and Industrial Safety Technician in the areas of automatic fire sprinklers, special hazards and fire alarm systems.

FIRE PROTECTION SYSTEMS DESIGNER:

prepares designs and layout drawings of new detection and suppression systems for commercial, residential, and industrial applications.

FIRE PROTECTION EQUIPMENT SALES REPRESENTATIVE:

merchandises fixed and portable fire protection equipment for commercial, industrial, and residential applications.

FIRE PROTECTION SYSTEMS INSTALLER:

interprets the protection system design for on-site installation, operation, and maintenance of fire protection systems.

INDUSTRIAL SAFETY TECHNICIAN: assists the industrial safety manager in plant fire safety programs and procedures; and insures compliance with federal, state, and municipal codes and ordinances.

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

- Fire Protection Consultant
- Fire Protection Equipment Sales Manager
- Industrial Safety Manager
- Municipal Safety Manager
- Property Loss/Risk Management Specialist

The Fire Protection Engineering Technology program is available on a "1 + 1 basis" - one year at NWTC Green Bay or other Wisconsin Technical College to complete the general education requirements, followed by one year at the Marinette Campus to complete all fire protection courses.

This approach is designed to minimize commuting or relocation. Courses marked with * would comprise the first year's requirements. Electives may be taken in either year. Contact a counselor for details.

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-503-111	Fire Protect Tech-Intro	2
10-503-113	Fire Extinguisher-Portable	2
* 10-503-123	Fire Tech-Blueprint Rdg	2
* 10-606-109	Drafting 1-Technical	2
* 10-606-115	CAD	3
* 10-801-196	Oral/Interpers Communication	3
* 10-804-120	Math-Tech Algebra	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-503-120	Fire Hazards Systems I-Special	3
10-503-126	Sprinkler Hydraulics-Auto	3
* 10-503-132	Fire Detection-Elec 1	3
10-503-180	Nicet-Basic	2
* 10-804-130	Math-Algebra/Trigonometry	3
* 10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-503-130	Fire Alarm Systems	3
10-503-135	Fire Detection-Elec 2	3
10-503-137	Sprinkler-Auto	4
10-503-138	Hazard Analysis	3
* 10-801-195	Communication-Written	3
	Elective	2
SEMESTER TOTAL		18

FOURTH SEMESTER

10-503-140	Fire Hazard Systems II-Special	3
10-503-148	Technical Project	3
* 10-801-197	Reporting-Technical	3
* 10-809-197	Society-Amer Contemp	3
	Elective	2
	Elective	2
SEMESTER TOTAL		16

*Indicates that an equivalent course is available at NWTC Green Bay or at other Wisconsin Technical Colleges under the 1 + 1 Program.

SUGGESTED ELECTIVES: NICET Advanced-Automatic Sprinklers (10-503-181), NICET Advanced-Special Hazards (10-503-182), and NICET Advanced-Alarms (10-503-183).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-503-111 FIRE PROTECTION TECHNOLOGY-INTRODUCTION

...domestic and international fire protection industry, combustion processes, fire extinguishment technology, the history of fires/fire codes, legal aspects of fire protection, quality assurance requirements, and career opportunities in fire protection.

10-503-113 FIRE EXTINGUISHER-PORTABLE

...water extinguishers, CO2 extinguishers, dry chemical extinguishers, halogenated extinguishers, use of fire extinguishers, national fire codes and test standards, and hydrotesting procedures.

10-503-120 FIRE HAZARDS SYSTEMS I-SPECIAL

...carbon dioxide systems, the phase out of Halon systems, clean agents, halocarbon systems, inert gas systems, dry chemical systems, wet chemical systems, foam systems, and explosion suppression systems.

10-503-123 FIRE TECHNOLOGY-BLUEPRINT READING

...reading construction floor plans, elevations, construction details, site plans, electrical plans, plumbing plans, HVAC, fire protection plans, site survey, bill of materials, and specifications.

10-503-126 SPRINKLER HYDRAULICS-AUTOMATIC

...hydraulic calculations for tree, loop, and grid systems using manual and computerized methods; and testing and evaluating water supplies for fire protection.

10-503-130 FIRE ALARM SYSTEMS ...selection of detection systems for specific hazards, proper location and spacing of detectors, programming fire control panels, and proper alarm wiring.

10-503-132 FIRE DETECTION-ELECTRONICS 1

...basic concepts of AC/DC electrical circuits, Ohm's Law, series/parallel resistance, conductors, insulators, batteries, and electro-mechanical induction used in fire protection.

10-503-135 FIRE DETECTION-ELECTRONICS 2

...electronic sensing and activating systems, detection, alarm and suppression systems, component parts, power sources, and testing and troubleshooting fire protection systems.

10-503-137 SPRINKLER-AUTOMATIC

...fire protection requirements of automatic sprinkler systems, design pipe schedule and hydraulically calculated water suppression systems, foam systems, and fire pump.

10-503-138 HAZARD ANALYSIS

...planning, surveying, and making professional recommendations regarding appropriate fire prevention, and suppression and detection systems for specified industrial fire hazards.

10-503-140 FIRE HAZARD SYSTEMS II-SPECIAL

...theories and principles of fire suppression in designing appropriate fire systems emphasizing CO2 and dry chemical methods, and building fire safety design and construction. (Prerequisite: 10-503-130, Fire Detector Selection)

10-503-148 TECHNICAL PROJECT

...independent research report or project utilizing technical and communication skills from Fire Protection Engineering Technician program.

10-503-180 NICET-BASIC

...procedures, forms, standards, codes, and general knowledge necessary to successfully pass the crossover work elements in level 2 - NICET Certification in "Auto Sprinkler, Special Hazard, and Fire Alarm Systems Layouts."

Descriptions of courses not found on this page can be found in the back of the catalog.

Gas Utility Construction and Service

Program Code 314692

TECHNICAL DIPLOMA - ONE YEAR (JUNE START DATE)

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

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.

Graduates of the Gas Utility Construction and Service Program will be able to:

- 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.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- Be able to obtain a commercial driver's license
- Place satisfactorily in the NWTC mathematics examination

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Propane Gas Delivery Person, New Customer Tank and Cylinder Installer, Bulk Plant Operator, Gas Construction Mechanic, Gas Main Installation Inspector, Gas Meter Mechanic, Gas Service Mechanic, Gas Clerk-Estimator, Gas Regulator Maintenance Mechanic, Gas Appliances Repair Mechanic, and Underground Facilities Locator.

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 MAIN INSTALLATION INSPECTOR: inspects contractor underground construction.

GAS CONSTRUCTION MECHANIC: installs and maintains gas distribution and transmission pipelines using trenching, backhoe, 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 over-pressure 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 is involved.

GAS APPLIANCE REPAIR MECHANIC: maintains and troubleshoots residential and/or commercial gas appliances and heating/cooking equipment.

UNDERGROUND FACILITIES LOCATOR: locates and marks all underground facilities prior to excavation using various locating equipment.

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

- Construction Crew Foreman
- Corrosion Technician
- Meter and Regulator Technician
- Utility Locating Supervisor
- Pipeline Welder
- Vendor Sales and Marketing

CURRICULUM

The Gas Utility Construction and Service Technical Diploma is a one-year, three-semester program. Upon graduation, a student will have completed 32 credits.

FIRST SEMESTER (SUMMER)

Course No.	Description	Credits
31-442-315	Welding-Gas Service 1	2
31-469-310	Gas Utility Field Trng 1	4
31-804-310	Math-Algebra/Trades	2
SEMESTER TOTAL		8

SECOND SEMESTER

31-413-348	Electricity-Basic	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
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		16

THIRD SEMESTER

31-413-358	Electricity-Gas Appliance	2
31-422-310	Metallurgy	2
31-469-340	Gas Utility Field Trng 4	4
SEMESTER TOTAL		8

This program is fully eligible for financial aid.

Students also receive Certification on Midwest Energy Pipeline Operator Qualification. This certificate is recognized throughout the United States.

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)

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

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)

Descriptions of courses not found on this page can be found in the back of the catalog.

Health Care Business Services

Program Code 101601

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Health Care Business Services prepares a student to work in the business offices of medical and dental clinics, hospitals, nursing homes, related health care facilities, health insurance settings in administrative, financial, and customer service roles.

A graduate of this program will be able to:

- 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 a financial calculator.
- Use ICD 9 and CPT 4 coding.
- Complete and process health insurance claim forms.
- Process medical records release and storage procedures.
- Identify components of the U.S. Health Care Delivery System.
- Balance a checkbook to a bank statement.
- Apply computer skills specific to health care and health insurance.
- Process supply inventory.
- Record accounting and financial transactions in a medical setting.
- Use a computer keyboard.
- Use effective telephone techniques.
- Use stress management techniques.
- Participate in an employment interview.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard
- Ability to work with co-workers, patients, and health care providers

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Medical Accountant/Bookkeeper, Admitting Representative, Appointment Secretary, Claims Analyst, Insurance Billing Clerk, Medical Records Clerk, Patient Services Representative, Patient Accounts Clerk, Office Assistant, Financial Services Representative, Medical and Insurance Customer Service Representative.

MEDICAL ACCOUNTANT/BOOKKEEPER: keeps financial records; prepares financial statements, balance sheet, and summary reports; analyzes accounts; handles the bookkeeping system of accounts payable and receivable; processes collections; handles end-of-period reports related to a medical facility.

ADMITTING REPRESENTATIVE: accomplishes patient admitting procedures by interviewing the patient and entering information on a computer terminal or admitting form system.

APPOINTMENT SECRETARY: makes appointments for a doctor and contacts patients related to appointment changes, in a clinic or hospital outpatient setting.

CLAIMS ANALYST: processes insurance claims on a computer terminal, performs claims investigations, provides customer service to insureds and insurance purchasers.

INSURANCE BILLING CLERK: makes sure that patient accounts are billed to the proper insurance carrier and all needed patient information is collected.

MEDICAL RECORDS CLERK: handles all patient medical records in area such as progress notes, pulls records of patients on a daily basis.

PATIENT SERVICES REPRESENTATIVE: greets, schedules, assists patients in a clinic setting.

PATIENT ACCOUNTS CLERK: records money, makes bank deposits, provides for collection preparation.

OFFICE ASSISTANT: assumes numerous duties in a clinic, nursing home, hospital, or other medical related facility that would involve, to some degree, all of the duties in the specialized occupational areas previously listed.

FINANCIAL SERVICES REPRESENTATIVE: meets with patients to analyze and explain health benefits and negotiates a payment agreement with the patient.

MEDICAL AND INSURANCE CUSTOMER SERVICE REPRESENTATIVE: responds to patient and insured questions, explains health benefits, identifies options, and solves problems.

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

CURRICULUM

The Health Care Business Services Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 69 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-103-111	Micro: Windows-Introduction	1
10-103-121	Micro: Word-Introduction	1
10-103-131	Micro: Excel-Introduction	1
10-160-111	Health Care Overview	2
10-510-165	Medical Terminology	3
10-530-110	Medical Info Processing	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel OR	3
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-103-141	Micro: Access-Intro	1
10-160-121	Medical Business/Law	1
10-160-131	Health Care Management Process	2
10-160-161	Insurance Health Principles	3
10-530-120	Medical Transcription	1
10-530-135	Health Info-Legal	1
10-801-195	Communication-Written	3
10-804-101	Math-Business	3
10-806-181	Anatomy/Struct-Funct	2
SEMESTER TOTAL		17

THIRD SEMESTER

10-101-110	Accounting 1	4
10-104-191	Customer Service Mgmt	3
10-160-143	Medical Practice Proc	3
10-530-124	Diagnostic/Proc-Code 1	3
10-809-197	Society-Amer Contemp OR	3
10-809-196	Sociology-Intro	3
	Elective	3
SEMESTER TOTAL		19

FOURTH SEMESTER

10-101-145	Financial Mgmt-Medical	3
10-160-140	Health Care Internship OR	3
10-160-141	Health Care Field Study	3
10-160-142	Medical Credit/Collect	2
10-160-151	Health Care Relations	2
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		16

SUGGESTED ELECTIVES: Micro: Powerpoint-Introduction (10-103-151), Health Care Business Trends (10-160-144), Problem Solving Team Building (10-196-189), Health Care-Quality (10-530-131).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-101-145 FINANCIAL MANAGEMENT-

MEDICAL ...budgeting, operations, cash flow, capital; rate setting process; working capital management; health care credit; cash and short-term investments; inventory management; long-term financing; leasing; purchasing capital equipment; and reporting operating results.

10-160-111 HEALTH CARE OVERVIEW ...U.S.

health care system beliefs and evolution, professionals and technologies, financing, outpatient and inpatient facilities, managed care, marketing, integrated delivery, U.S. system compared to others, future of health systems, field study.

10-160-121 MEDICAL BUSINESS/LAW ...code of

ethics, ethical questions in the medical setting, patient's rights, law introduction, lawyers and clients, judges, courts, juries, civil action, appeal, out-of-court settlements, contract laws, wills, trusts.

10-160-131 HEALTH CARE MANAGEMENT

PROCESSES ...management and supervision in health care institutions: planning, organizing, staffing, directing and controlling, and labor relations.

10-160-140 HEALTH CARE BUSINESS

SERVICES INTERNSHIP ...career planning, resumes, interviews, search strategy, actual health care work experience, applied workplace improvements and ethical model.

10-160-141 HEALTH CARE FIELD STUDY

...career planning, resumes, interviews, work flow and services quality analysis in health care settings, recommended improvements, health care issue analysis, applied ethical model.

10-160-142 MEDICAL CREDIT/COLLECTIONS

...credit in a medical facility; history, definition, and department organization; granting credit in a medical facility; controlling credit: collecting the account, measuring the effort, and auditing the function.

10-160-143 MEDICAL PRACTICE PROCEDURES

...professional duties, ethical codes, medical scheduling, admissions, third-party payer processes, managed care procedures, empathy, respect for diversity, medical records, confidentiality, information systems, legal regulation, office medical administration.

10-160-151 MANAGED HEALTH CARE

RELATIONSHIPS ...the financing of health care, managed care participants and products, integrated systems, organization structure, provide networks, purchase cost containment, quality of care, regulation, and accountability.

10-160-161 INSURANCE HEALTH PRINCIPLES

...risk; health and dental insurance; worker's compensation; malpractice; government plans: Medicare, Medicaid, CHAMPUS; TriCare, BadgerCare, Managed Care; Benefit Plan Design; and Provider Contracts.

10-510-165 MEDICAL TERMINOLOGY ...spelling,

pronunciation, definition, and abbreviation application; word roots, prefixes and suffixes, and anatomical structure.

10-530-110 MEDICAL INFORMATION

PROCESSING ...medical record contents, registration, procedures, quantitative analysis, numbering, filing, retention, abstracting, and indexing; computerization of record processing activities; and records control, retention, creation; and evaluating systems.

10-530-120 MEDICAL TRANSCRIPTION

...transcription process for medical dictation in a health care facility; transcription techniques; practice transcribing physicians' dictated reports; and apply grammar, punctuation, spelling, and technical rules. Prerequisites: 10-510-165, Medical Terminology; 10-103-121, Micro:Word Introduction)

10-530-124 DIAGNOSTIC/PROCEDURAL-

CODING 1 ...the International Classification of Diseases (ICD-9-CM) with emphasis on basic coding skills, use of this classification system in acute and other health care settings, its application for statistical and reimbursement purposes. (Pre/ Corequisites: 10-806-182, Anatomy & Physiology 1 and 10-806-187, Anatomy & Physiology 2; OR 31-806-312, Anatomy/Structure-Function; OR 10-806-180, Anatomy/Physiology)

10-530-135 HEALTH INFORMATION-LEGAL

...the American legal system; evaluate privacy, confidentiality, privileged communication rights and responsibilities and consent; evaluate health care legislation.

Descriptions of courses not found on this page can be found in the back of the catalog.

Health Information Technology

Program Code 105301

ASSOCIATE DEGREE - TWO YEARS, PLUS ONE SUMMER

Offered at the Green Bay campus. Admissions, registration, counselor: (920) 498-5733. Course information: (920) 498-5543.
Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Health Information Technology program teaches students to work with medical records and statistics, code medical data, maintain health record systems, transcribe medical information, and control the usage and release of health information.

Students who have an interest in the business and information aspects of health care but are unsure of their options and preferences in this growing field have a special opportunity. Students begin their programs with the SAME course selection that is required for students in Health Care Business Services. The first semesters for Health Information Technology and Health Care Business Services are identical and offer students opportunities to learn about and observe work in both areas through Field Study experiences. This is a unique opportunity within the College.

Graduates of the Health Information Technology program will be able to:

- Be successfully employed in the field.
- Define health care data elements.
- Evaluate documentation.
- Collect, store, and retrieve patient and departmental data.
- Assign diagnostic/procedure codes.
- Monitor data accuracy.
- Analyze, interpret, and present healthcare data/statistics.
- Understand information technology/systems.
- Manage/supervise resources, training, projects, and processes in the Health Information Department.
- Act to improve performance and strategic thinking in the Health Information Department and institution.
- Monitor changes in and compliance with the legal and regulatory environment related to health information.
- Release health information/patient records.
- Apply principles of organization, financing, and delivery of health care services.
- Apply principles of biomedical sciences.
- Use basic microcomputer applications.

Students will be required to provide their own transportation to clinical facilities, pay for liability insurance for each clinical course, and purchase any uniforms/name tags that might be required.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- A high school diploma or equivalent
- High school biology or the equivalent
- A medical examination satisfactorily completed within three months before entering the program
- Attendance at program orientation

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Coder/Abstractor, Release of Information Specialist, Health Record Analyst, Discharge Analyst, Cancer Registrar, Medical Transcriptionist, Quality Analyst/Case Manager, or Supervisor in a Health Information/ Medical Record Department.

Career opportunities are available in the following facility areas: hospitals, clinics, nursing homes, mental health facilities, and home health agencies; state and federal health agencies; and private industry (insurance, microfilm, record storage and retrieval, computer vendors, and copy service companies).

CODER/ABSTRACTOR: assigns diagnosis and procedure codes according to recognized classification systems, retrieves and enters patient health information into a computerized system.

RELEASE OF INFORMATION SPECIALIST: responsible for the usage and proper release of health information.

HEALTH RECORD ANALYST: retrieves and displays health data for administrative and health statistics using the medical record or a variety of computerized health record indexes.

DISCHARGE ANALYST: organizes, analyzes, and technically evaluates medical records according to established standards.

CANCER REGISTRAR: retrieves and displays data on a facility's treatment and staging of cancer cases and is an integral part of a cancer program and its accreditation by the American College of Surgeons.

MEDICAL TRANSCRIPTIONIST: uses transcription and word processing equipment to transcribe dictation from physicians and allied health professionals. The Registered Health Information Technician (RHIT) (formerly Accredited Record Technician (ART)) generally would become a supervisor of this function.

QUALITY ANALYST/CASE MANAGER: retrieves and displays health data using predetermined criteria to assist organizations in their quality improvement /case management process.

SUPERVISOR IN A HEALTH INFORMATION/ MEDICAL RECORD DEPARTMENT:

may be responsible for all or part of the functions listed above in addition to assisting with the maintenance of optimum information storage and retrieval systems.

NOTE: Students who do not meet the above requirements should consult an NWTC counselor about ways to make up any deficiencies through testing or course work.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

CURRICULUM

The Health Information Technology Associate Degree is a two-year, one-summer, five-semester program. Upon graduation a student will have completed 71 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-103-111	Micro: Windows-Introduction	1
10-103-121	Micro: Word-Introduction	1
10-103-131	Micro: Excel-Introduction	1
* 10-160-111	Health Care Overview	2
* 10-510-165	Medical Terminology	3
* 10-530-110	Medical Info Processing	3
10-801-195	Communication-Written	3
10-801-196	Oral/Interpers Communication	3

SEMESTER TOTAL

17

SECOND SEMESTER

10-103-141	Micro: Access-Intro	1
* 10-160-131	Health Care Management Process	2
* 10-160-161	Insurance Health Principles	3
* 10-530-120	Medical Transcription	1
* 10-530-135	Health Info-Legal	1
* 10-530-138	Health Info-Release of Info	1
* 10-806-180	Anatomy/Physiology	4
10-809-198	Psychology-Intro	3

SEMESTER TOTAL

16

THIRD SEMESTER (SUMMER)

10-809-195	Economics	3
	Elective	3

SEMESTER TOTAL

6

FOURTH SEMESTER

* 10-510-136	Nursing Pharmacology-AppI	2
* 10-530-124	Diagnostic/Proc-Code 1	3
* 10-530-132	Health Statistics	2
* 10-530-133	Health Info Affiliation 1	1
10-806-198	Pathophysiology	3
10-809-196	Sociology-Intro	3
	OR	
10-809-197	Society-Amer Contemp	3
	Elective	3

SEMESTER TOTAL

17

FIFTH SEMESTER

* 10-530-131	Health Care-Quality	2
* 10-530-137	Diagnostic/Proc-Code 2	5
* 10-530-141	Health Info Affiliation 2	6
* 10-530-142	Health Info Tech Update	2

SEMESTER TOTAL

15

SUGGESTED ELECTIVES: Medical Practice Procedures (10-160-143); Health Care Relationships (10-160-150); Health Care Business Trends (10-160-144); Micro: Powerpoint Intro (10-103-151) or Medical Business/Law (10-160-121)

NOTES: No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue in or graduate from this program.

Permission of Program Director is required if a student is not enrolled in this program.

ACCREDITATION: 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). The Health Information Technology program is accredited by the Commission on the Accreditation of Allied Health Education Programs (CAAHEP) in cooperation with the Council on Accreditation of the American Health Information Management Association, 919 N. Michigan Avenue, Suite 1400 Chicago, IL, 60611-1683 (312)787-2672

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-160-111 HEALTH CARE OVERVIEW ...U.S. health care system beliefs and evolution, professionals and technologies, financing, outpatient and inpatient facilities, managed care, marketing, integrated delivery, U.S. system compared to others, future of health systems, field study.

10-160-131 HEALTH CARE MANAGEMENT PROCESSES ...management and supervision in health care institutions: planning, organizing, staffing, directing and controlling, and labor relations.

10-160-161 INSURANCE HEALTH PRINCIPLES ...risk; health and dental insurance; worker's compensation; malpractice; government plans: Medicare, Medicaid, CHAMPUS; TriCare, BadgerCare, Managed Care; Benefit Plan Design; and Provider Contracts.

10-510-165 MEDICAL TERMINOLOGY ...spelling, pronunciation, definition, and abbreviation application; word roots, prefixes and suffixes, and anatomical structure.

10-530-110 MEDICAL INFORMATION PROCESSING ...medical record contents, registration, procedures, quantitative analysis, numbering, filing, retention, abstracting, and indexing; computerization of record processing activities; and records control, retention, creation; and evaluating systems.

10-530-120 MEDICAL TRANSCRIPTION ...transcription process for medical dictation in a health care facility; transcription techniques; practice transcribing physicians' dictated reports; and apply grammar, punctuation, spelling, and technical rules. Prerequisites: 10-510-165, Medical Terminology; 10-103-121, Micro:Word Introduction)

10-530-124 DIAGNOSTIC/PROCEDURAL-CODING 1 ...the International Classification of Diseases (ICD-9-CM) with emphasis on basic coding skills, use of this classification system in acute and other health care settings, its application for statistical and reimbursement purposes. (Pre/Corequisites: 10-806-182, Anatomy & Physiology 1 and 10-806-187, Anatomy & Physiology 2; OR 31-806-312, Anatomy/Structure-Function; OR 10-806-180, Anatomy/Physiology)

10-530-131 HEALTH CARE-QUALITY ...quality management concepts; quality improvement processes; programs and procedures as they relate to medical records; utilization review, risk management, and other healthcare evaluation activities and requirements.

10-530-132 HEALTH STATISTICS ...medical statistical data collection and display including definitions and procedures for computing inpatient census, percentage of occupancy, mortality, autopsies, length of stay, and other rates.

10-530-133 HEALTH INFORMATION TECHNOLOGY-AFFILIATION 1 ...clinical facility assignments designed to allow students to observe, assist, and acquire skills in application of basic health information functions.

10-530-135 HEALTH INFORMATION-LEGAL ...the American legal system; evaluate privacy, confidentiality, privileged communication rights and responsibilities and consent; evaluate health care legislation.

10-530-137 DIAGNOSTIC/PROCEDURAL-CODING 2 ...advanced ICD-9-CM coding skills; their application to the statistical and reimbursement mechanisms used in acute and other health care settings; structure and use of the CPT/HCPCS coding scheme. (Prerequisites: 10-530-124, Diagnostic/Proc Code 1; 10-806-198, Pathophysiology)

10-530-138 HEALTH INFORMATION-RELEASE OF INFORMATION ...legal consents, mechanism for releasing information, medical records as legal documents, and legal procedures in court disclosure of medical record information (Prerequisite: Satisfactory completion of semester 1).

10-530-141 HEALTH INFORMATION AFFILIATION 2 ...application of previously acquired knowledge and skills in clinical experiences with the technical procedures of health record systems in various health care settings.

10-530-142 HEALTH INFORMATION TECHNOLOGY UPDATE ...clinical situations including a review seminar in preparation for accreditation examination, and pre-accreditation/pre-graduation activities.

Descriptions of courses not found on this page can be found in the back of the catalog.

Heating, Ventilation, Air Conditioning, and Refrigeration Technology

ASSOCIATE DEGREE - TWO YEARS

Program Code 106011

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

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.

Graduates of the Heating, Ventilation, Air Conditioning, and Refrigeration Technology Program will be able to:

- Develop an HVAC/R control circuit
- Troubleshoot HVAC/R control circuits
- Troubleshoot refrigeration systems
- Troubleshoot gas fired heating systems
- Troubleshoot oil fired heating systems
- Troubleshoot commercial and residential HVAC/R systems
- Troubleshoot airflow for HVAC/R systems
- Troubleshoot hydronic HVAC systems
- Use engineering principles to troubleshoot HVAC/R systems
- Use industry standard tools to troubleshoot HVAC/R systems
- Estimate a heating and cooling load
- Communicate HVAC/R service reports for customers
- Prepare for EPA Refrigeration Certification exam

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- High school algebra or equivalent
- NWTC placement exam determines starting level in program

MATH LEVEL

Students should have mastered algebra skills before entering this program. For a description of algebra skills, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the HVAC/R program will have the potential for employment as an HVAC/R Service Technician for a Mechanical Contractor, HVAC/R Facilities Maintenance Department, Equipment Manufacturer or HVAC/R Wholesales, servicing a combination of commercial, industrial and residential HVAC/R systems.

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: require the technician to work with the HVAC/R systems used in commercial applications such as office buildings, schools, stores, supermarkets, and restaurants. Duties include, but not limited to, installs, services, troubleshoots, and repairs 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: require the technician to work with HVAC/R systems used in an industrial setting such as manufacturing, processing, and packaging plants. Duties include, but not limited to, installs, services, troubleshoots, and repairs 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, installs, services, troubleshoots, and repairs 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

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

FIRST SEMESTER

Course No.	Description	Credits
10-601-110	Air Conditioning Fund	3
10-601-111	Electrical Fund-HVACR	3
10-601-133	Refrigeration Fund	3
10-606-112	Engineering Applications	1
10-801-196	Oral/Interpers Communication	3
10-804-120	Math-Tech Algebra	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-601-121	Heating Systems	3
10-601-127	Electrical Control/Sys	3
10-614-126	Architectural Mech Systems	4
10-801-195	Communication-Written	3
10-804-130	Math-Algebra/Trigonometry	3
SEMESTER TOTAL		16

THIRD SEMESTER

10-601-131	Heating System Appl	3
10-601-132	Air Conditioning Appl	3
10-601-147	Motor/Control Applications	3
10-801-197	Reporting-Technical	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-601-135	Hydronic Sys Des/Comm Bldg	3
10-601-141	Heat/Vent/AC/Refrig Sys	3
10-601-143	Refrigeration Appl	3
10-601-145	Electronic Energy Mgmt Sys	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		18

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-601-110 AIR CONDITIONING FUNDAMENTALS

...factors affecting the comfort zone; basic air distribution principles, heat flow within the occupied zone, grilles, and registers, selection and applications of diffusers, and heat load calculations. (Prerequisite: Accepted into Heating, Ventilation, Air Conditioning and Refrigeration Technology)

10-601-111 ELECTRICAL FUNDAMENTALS-HVAC/R

...electron theory, AC/DC fundamentals, electrical quantities, OHM's Law, magnetic principles, solenoids, meter usage, power generation and distribution, wiring systems and materials, transformers and relays, schematic diagram development, and troubleshooting. (Prerequisite: Accepted into Heating, Ventilation, Air Conditioning and Refrigeration Technology)

10-601-121 HEATING SYSTEMS ...gas heating properties, gas combustion, gas furnaces, gas burners, gas controls, ignition systems, safety and operating controls, installation, venting combustion, air & troubleshooting. (Prerequisites: 10-601-111, Electrical Fundamentals-HVACR; 10-601-133, Refrigeration Fundamentals)

10-601-127 ELECTRICAL CONTROL/SYSTEMS

...power supply and distribution systems; operating and safety control construction, operation, and applications; and the development wiring and troubleshooting of control schematics for basic HVAC/R systems. (Prerequisites: 10-601-111, Electrical Fundamentals-HVACR; 10-601-133, Refrigeration Fundamentals)

10-601-131 HEATING SYSTEM APPLICATIONS

...heat system combustion, analysis of heat system wiring, troubleshooting the mechanical and electrical systems, start up and set up of heat systems, ignition system, and oil system servicing and troubleshooting. (Prerequisites: 10-601-121, Heating Systems; 10-601-127, Electrical Control/Systems)

10-601-132 AIR CONDITIONING APPLICATIONS

...types of HVAC/R systems, psychrometric applications, air flow measurement, various applications of fans, and duct design methods. (Prerequisites: 10-601-121, Heating Systems; 10-601-127, Electrical Control/Systems)

10-601-133 REFRIGERATION FUNDAMENTALS

...safety hazards, principles of refrigeration physics, temperature and pressure measurement, heat content, composition of refrigerants, refrigeration compressors, metering devices, refrigerant recovery techniques, Federal certification preparation. (Prerequisite: Accepted into Heating, Ventilation, Air Conditioning and Refrigeration Technology)

10-601-135 HYDRONIC SYSTEM DESIGN/COMMERCIAL BUILDING CONTROL SYSTEMS

...layout; application of hydronic piping; fitting/valve application; system design and installation; hydronic flow measurement; pneumatic control basics; control design, application, and set up; calibration of pneumatic HVAC/R control systems. (Prerequisites: 10-601-131, Heating Systems Applications; 10-601-147, Motor/Control Applications)

10-601-141 HVAC/R SYSTEMS ...analyze, set up, and troubleshoot three-phase motor starting systems, damper actuators, and economizers; advanced service and troubleshooting of commercial and industrial HVAC/R systems; rooftops; chillers; and split systems. (Prerequisites: 10-601-131, Heating Systems Applications; 10-601-147, Motor/Control Applications)

10-601-143 REFRIGERATION APPLICATIONS

...refrigeration components, piping, and system sizing and selection; installation, servicing, and troubleshooting refrigeration systems and controls for residential, commercial, and industrial refrigerator/freezers, walk-in and reach-in coolers/freezers; and ice machines. (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, Motor/Control Applications)

10-601-145 ELECTRONIC ENERGY

MANAGEMENT SYSTEMS ...computer control of HVAC/R systems; installation, programming, start-up, and troubleshooting DDC computer-controlled systems; utilizing computers to control building automation, conserve energy, aid in HVAC/troubleshooting and service. (Prerequisites: 10-601-131, Heating System Applications; 10-601-147, Motor/Control Applications)

10-601-147 MOTOR/CONTROL APPLICATIONS

...analyze and troubleshoot single-phase AC induction motors and their starting components used in the HVAC/R industry, including refrigeration compressor motors; set up and test motors under common HVAC/R conditions. (Prerequisites: 10-601-121, Heating Systems; 10-601-127, Electrical Control/Systems)

Descriptions of courses not found on this page can be found in the back of the catalog.

Hospitality and Tourism Management

Program Code 101092

ASSOCIATE DEGREE - TWO YEARS, PLUS ONE SUMMER

Offered at the Green Bay and Sturgeon Bay campuses. Information in Sturgeon Bay: (920) 746-4900. Information in Green Bay: (920) 498-5733.

PROGRAM DESCRIPTION

Hospitality and Tourism 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.

Graduates of this program will be able to:

- Develop a personal hospitality/tourism career plan.
- Prevent accidents and foodborne illness.
- Establish quality customer service systems.
- Manage housekeeping operations in a variety of lodging establishments.
- Maximize productivity in front office operations.
- Apply cooking principles to the preparation of food.
- Maximize profits in food and beverage operations.
- Perform hospitality tasks in an internship setting.
- Apply laws and regulations to hospitality operations.
- Evaluate maintenance operations alternatives.
- Conduct a conference or special event.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High School graduate or equivalent
- Basic math skills
- Keyboarding skills

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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 the program will have the potential for employment in a wide range of positions for a broad variety of hospitality and tourism operations including Front Office Manager, Convention Service Manager, Food Service Manager, Assistant Executive Housekeeper, and Sales Manager.

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.

CONVENTION SERVICE MANAGER: coordinates activities of staff and convention personnel to make arrangements for group meetings and conventions held in a hotel or convention facility.

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.

ASSISTANT EXECUTIVE HOUSEKEEPER: supervises housekeeping employees, trains new hires, requisitions supplies, controls inventory, and inspects personnel work assignments.

SALES MANAGER: plans and administers sales programs to generate sales in a hotel or tourism organization, organizes prospect files, plans and prepares advertising and promotional materials, and arranges for publicity.

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

- General Manager
- Executive Housekeeper
- Marketing Director
- Restaurant Manager
- Catering Manager

CURRICULUM

The Hospitality and Tourism Management Associate Degree is a two-year program. Upon graduation, students will have completed 67 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-109-110	Hospitality/Tourism	2
10-109-111	Food Service Sanitation-App	1
10-109-115	Housekeeping Management	2
10-109-122	Customer/Employee Rel	3
10-801-195	Communication-Written	3
10-804-101	Math-Business	3
SEMESTER TOTAL		14

SECOND SEMESTER

10-101-102	Accounting-Intro	3
10-103-103	Micro Basics MS Office 1	3
10-109-114	Front Office Management	3
10-109-123	Foods-Basic Principles	4
10-109-124	Food/Bev Cost Control	3
SEMESTER TOTAL		16

SUMMER (INTERNSHIP)

10-109-191	Hospitality Tourism-Intern	4
SEMESTER TOTAL		4

THIRD SEMESTER

10-104-110	Marketing Principles	3
10-109-142	Hospitality Law/Liabil	3
10-109-155	Management-Dining Room	1
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		16

FOURTH SEMESTER

10-109-150	Facilities Management	2
10-109-151	Special Events Planning	2
10-109-190	Hospitality Portfolio	1
10-196-110	Supervision Principles	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: Beverage Management (10-109-163), Hospitality-Purchasing (10-109-162), Restaurant Operations Management (10-109-166).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-109-110 HOSPITALITY/TOURISM ...scope of industry, career planning, restaurant segments, food service operations, institutional food service, lodging segments, lodging operations, current issues/forces, tourism industry components, destinations, transportation, role of service, future considerations.

10-109-111 FOOD SERVICE SANITATION-APPLIED ...contamination/foodborne illness, safe food handler, food safety systems, purchasing, receiving, storage, preparation, serving, facilities, equipment, cleaning and sanitation, cleaning program, pest control, accident prevention, crisis management, sanitation regulations/standards.

10-109-114 FRONT OFFICE 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.

10-109-115 HOUSEKEEPING MANAGEMENT ...staffing, housekeeping operations, facilities safety and security, cleaning routines, materials selection, laundry operations.

10-109-122 CUSTOMER/EMPLOYEE RELATIONS ...service philosophy, service roles and relationships, service strategies, service tools, personal and professional development, internal service strategies, unique characteristics of hospitality service organizations.

10-109-123 FOODS-BASIC PRINCIPLES ...food composition, cooking methods, tools/equipment, nutrition, menu, recipe standardization, eggs/dairy, stocks/sauces, soups, meats, poultry/seafood, vegetables, starches, salads, fruits, baked goods, beverages, food preservation.

10-109-124 FOOD/BEVERAGE COST CONTROL ...control functions, purchasing/receiving controls, storing/issuing controls, production controls, monitoring activities, sales controls, beverage controls, labor controls.

10-109-142 HOSPITALITY LAW/LIABILITY ...hospitality laws and regulations, duty to receive patrons, duty to protect patrons, crimes, employment law, contracts, property rights, forms of business organization, attorney relationship, settlement of legal disputes.

10-109-150 FACILITIES MANAGEMENT ...controlling costs in maintenance departments, electrical/HVAC systems, safety and security systems, energy and waste management, building and exterior facilities, planning design and renovations.

10-109-151 SPECIAL EVENTS PLANNING ...special event marketing, promotions meeting target markets, contract details and considerations, function preparations, special equipment and service needs, staging the event. Students will achieve certification from the Educational Institute of the American Hotel and Motel Association.

10-109-155 MANAGEMENT-DINING ROOM ...professional server behaviors, service mise en place, banquet, buffet, and classic service styles, proper dining etiquette, bar and beverage service, meal service, dining room management.

10-109-190 HOSPITALITY PORTFOLIO ...portfolio development process, documentation, production assembly and presentation.

10-109-191 HOSPITALITY TOURISM-INTERNSHIP ...planning and preparation, career advancement plan, locating an internship provider, work habits, job performance, job evaluation, progress reporting, networking, final report, program evaluation.

10-196-110 SUPERVISION PRINCIPLES ...supervisor's role, planning, problem solving, organizing/staffing/training/retraining employees, motivation, evaluating performance, challenging employees, teamwork, controlling work, discipline, productivity, quality, and diversity.

Descriptions of courses not found on this page can be found in the back of the catalog.

Individualized Technical Studies

Program Code 108251

ASSOCIATE DEGREE - FULL-TIME, PART-TIME

Offered at the Green Bay campus, Admissions, registration, or counselor: (920) 498-5498. Course information: (920) 498-6866. Toll free: (800) 422-NWTC.

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.

The Individualized 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.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. See the Admissions section of this catalog for more information.

- Good reading, writing, and math skills
- Math and reading assessments
- Completion of all recommended activities to address math and reading skills deficiencies

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog. Selection of specific courses within a program may have higher-level math requirements and should be discussed with the program counselor.

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.

CURRICULUM

Total credits for the Individualized Technical Studies program will range from 64-72 credits depending on the personal program portfolio selected. Admission to the program must be approved prior to completion of 32 credit hours.

Program requirements must include:

Individualized Technical Studies Core Credits **40-48**

A minimum of 40 credits of individualized technical studies is required and may be drawn from all divisions of the college. A minimum of 20 credits must be focused on one discipline. The selection of courses must be relevant to the student's career goals and should provide sufficient hours of concentration in one or two specific technical areas to ensure technical competence in achieving the desired occupational goals. Prerequisites must be met.

Course No.	Description	Credit
Communications (Select at least two)		6
10-801-195	Communication-Written	3
10-801-196	Communication-Oral/Interpersonal	3
10-801-197	Technical Reporting (Prerequisite: Written Communication)	3
10-801-198	Speech	3

Social Science (Select at least one) 3

10-809-195	Economics	3
10-809-196	Introduction to Sociology	3
10-809-197	Contemporary American Society	3

Behavioral Science (Select at least one) 3

10-809-198	Introduction to Psychology	3
10-809-199	Psychology of Human Relations	3

Select 3 additional credits from the above list to complete the General Education course requirements.

3

Math/Science Requirements (Select one) 3

10-804-120	Tech Algebra	3
10-804-130	Algebra/Trigonometry	3
10-806-150	Physics 1-Technical	3
10-806-182	Anatomy/Physiology	3
10-804-101	Business Math	3
	Elective	3
	Elective	3

Total Program Credits **64-72**

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-801-195 COMMUNICATION-WRITTEN ...the nature and scope of technical writing, document design, graphics, ethics of the writing process, definition, description, memos, business letters, resume and cover letter, instructions, summaries, and short reports.

10-801-196 COMMUNICATION-INTERPERSONAL ...the communication process, perception and self-concept, language, listening, nonverbal communication, interpersonal relationships, communication in groups and public communication; prepare and deliver two speeches and one group presentation.

10-801-197 REPORTING-TECHNICAL ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 801-195)

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.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-809-196 SOCIOLOGY-INTRODUCTION ...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.

10-809-197 SOCIETY-AMERICAN CONTEMPORARY ...the major social institutions within the American society: government, family, education, religion, and economic system.

10-809-198 PSYCHOLOGY-INTRODUCTION ...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.

10-809-199 PSYCHOLOGY-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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Individualized Technical Studies - Journeyworker

Program Code 104995

ASSOCIATE DEGREE - FULL-TIME, PART-TIME

Offered at the Green Bay campus, Admissions, registration, or counselor: (920) 498-5498. Course information: (920) 498-6866. Toll free: (800) 422-NWTC

PROGRAM DESCRIPTION

The 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-two 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.

The Occupational Support courses may be selected from career areas such as accounting, architectural technology, automotive technology, civil engineering technology, corrections science, electronics, financial institutions management, fire protections engineering technology, heating, ventilation, air conditioning and refrigeration technology, landscape horticulture technician, logistics, or other areas of specific interest.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. See the Admissions section of this catalog for more information.

- Good reading, writing, and math skills
- Math and reading assessments
- Completion of all recommended activities to address math and reading skills deficiencies

MATH LEVEL

Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog. Selection of specific courses within a program may have higher-level math requirements and should be discussed with the program counselor.

EMPLOYMENT POTENTIAL

The individualized nature of this program allows students to take advantage of the skills they have acquired in the apprenticeship program, enhance those skills with coursework from an area of interest, and prepare for a wide variety of workplace opportunities.

CURRICULUM

Total credits for the Individualized Technical Studies-Journeyworker 64 credits.

REQUIRED PROGRAM COMPONENTS Credits

Wisconsin Journey Certificate 32
We require 32 credits in occupational specific courses. Advanced standing will be granted for the 32 credits with the completion of the apprenticeship if it includes a minimum of 400 hours of paid related training (day school).

GENERAL EDUCATION 15

Communication-Select two
10-801-195 Communication-Written 3
10-801-196 Communication-Interpersonal 3
10-801-197 Technical Reporting 3
10-801-198 Speech 3

Social Science-Select one
10-809-195 Economics 3
10-809-196 Sociology-Introduction 3
10-809-197 Society-American Contemporary 3

Behavioral Science-Select one
10-809-198 Psychology-Introduction 3
10-809-199 Psychology-Human Relations 3

Select one additional course from the list above 3

OCCUPATIONAL SUPPORT & ELECTIVES 17

Complete 11 supportive and 6 elective course credits. A three-credit (minimum) math or science class must be included as part of the 17 credits. Advanced standing for a maximum of 8 of these 17 credits will be granted for the required apprentice related instruction beyond the 400 hours statutory minimum.

TOTAL PROGRAM CREDITS 64

The remaining courses may be selected from Associate Degree career areas such as accounting, corrections science, dental hygienist, electronics, financial institutions management, healthcare business services, hospitality and tourism management, laboratory technician, marketing, mechanical design technician, or other areas of special interest.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

These courses provide the opportunity for the student to develop the knowledge, skills, and understanding of:

10-801-195 COMMUNICATION-WRITTEN ...the nature and scope of technical writing, document design, graphics, ethics of the writing process, definition, description, memos, business letters, resume and cover letter, instructions, summaries, and short reports.

10-801-196 COMMUNICATION-INTERPERSONAL ...the communication process, perception and self-concept, language, listening, nonverbal communication, interpersonal relationships, communication in groups and public communication; prepare and deliver two speeches and one group presentation.

10-801-196 REPORTING-TECHINCAL ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 801-195)

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.

10-809-195 ECONOMICS ...scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment, and global economic issues.

10-809-196 SOCIOLOGY-INTRODUCTION ...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.

10-809-199 SOCIETY—AMERICAN CONTEMPORARY ...the major social institutions within the American society: government, family, education, religion, and economic system.

10-809-198 PSYCHOLOGY-INTRODUCTION ...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.

10-809-199 PSYCHOLOGY-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.

Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Industrial Mechanic

Program Code 314622

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

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

Graduates of the Industrial Mechanic Program will be able to:

- Interpret the elements of mechanics.
- Use measuring devices.
- Use hand, stationary, and portable power tools.
- Prepare mounting bases for machine installation.
- Identify threaded fasteners and various locking and holding devices.
- Identify types of structural steel shapes.
- Apply safety requirements to rigging an object.
- Install pipe.
- Classify valves used in a piping system.
- Describe the difference between machine, carbon, and alloy steels.
- Identify types of bearings.
- Apply lubricants.
- Demonstrate parallel shaft alignment.
- Use chain drive component terminology.
- Identify types of gears.
- Identify types of couplings.
- Use electrical motors.
- Identify pipe classifications, demonstrate correct pipe assembly and installation procedures.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of the catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school background in mathematics, science, and industrial education

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Industrial or Maintenance Mechanic, Machine Adjuster, Machine Assembler, Machinery Erector, and Machinery Repairer.

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 insure 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 34 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-420-314	Machine Shop-Basic	4
31-421-355	Blueprint Rdg/Sket-Indus	2
31-462-305	Mechanic 1-Industrial	5
31-462-306	Mechanic 2-Industrial	5
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		18

SECOND SEMESTER

31-442-365	Welding-Industrial	3
31-462-307	Mechanic 3-Industrial	5
31-462-308	Mechanic 4-Industrial	5
31-462-356	Hydraulics-Industrial	2
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		16

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

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).

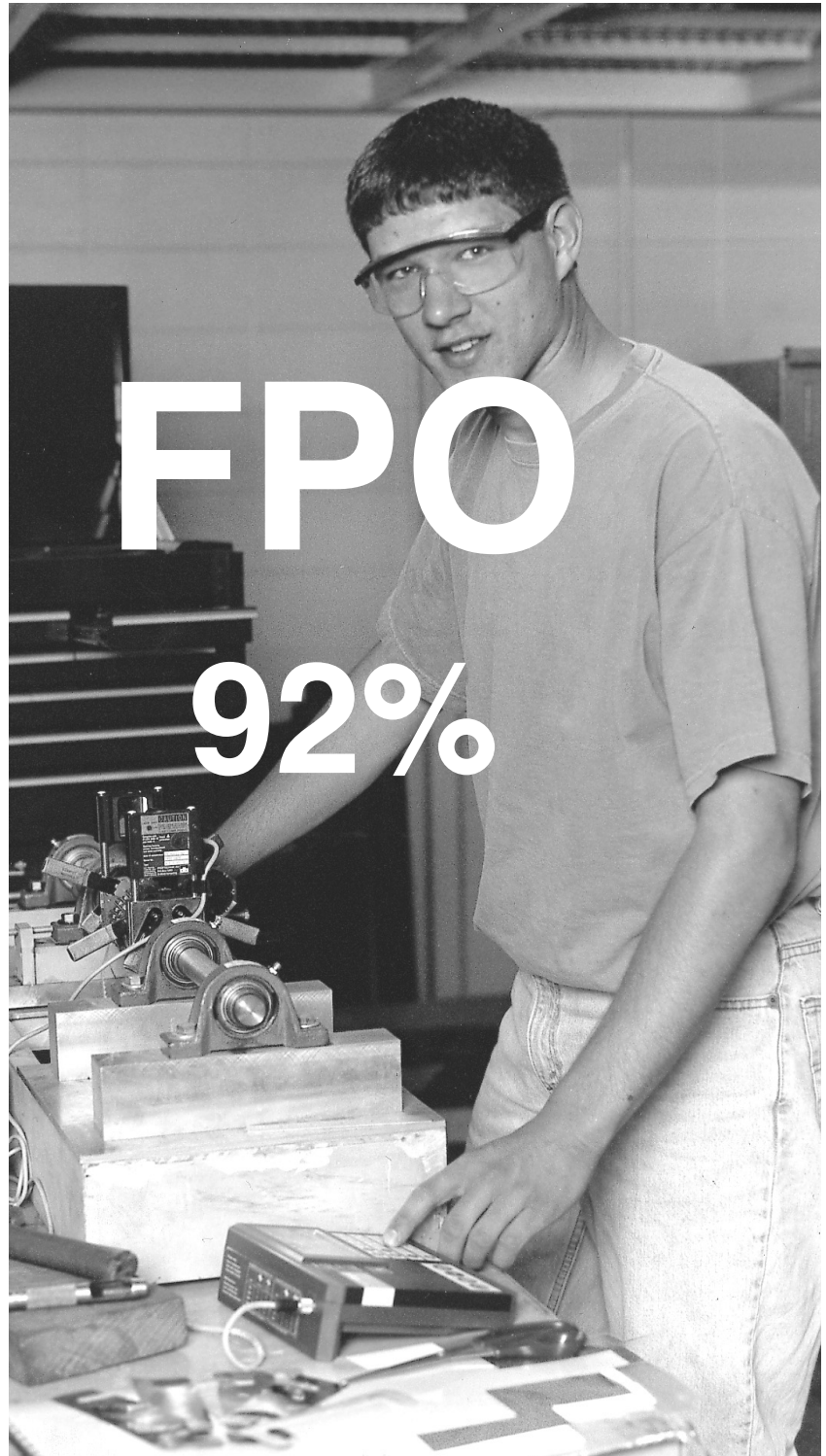
31-462-305 MECHANIC 1-INDUSTRIAL ...basic elements of mechanics: precision measurements, safe use of hand and power tools, industrial lift truck operation, sheet metal layout and fabrication, machine mounting bases mechanical fasteners.

31-462-306 MECHANIC 2-INDUSTRIAL ...structural steel nomenclature and installation, safe and proper use of scaffolding, rigging and weight estimation, maintenance of hand and cutting tools, speciality tool fabrication, piping systems, and tubing systems.

31-462-307 MECHANIC 3-INDUSTRIAL ...basic metallurgy, functions of gaskets, packing and mechanical seals, lubrication properties and systems, bearing types and functions, electrical knowledge and safety.

31-462-308 MECHANIC 4-INDUSTRIAL ...belt drives, chain drives, power transmission couplings, gear drives, preventative maintenance.

31-462-356 HYDRAULICS-INDUSTRIAL ...hydraulic/pneumatic system maintenance, hydraulic pump repair, motors, controls, actuators, and pneumatic components.



Descriptions of courses not found on this page can be found in the back of the catalog.

Jewelry Repair and Fabrication

Program Code 314411

TECHNICAL DIPLOMA - NINE MONTHS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Jewelry Repair and Fabrication Program prepares students to design, create, and repair jewelry by applying a variety of repair, manufacturing and fabrication processes and techniques.

Graduates of the Jewelry Repair and Fabrication Program will be able to:

- Perform basic bench jeweler tasks/ functions.
- Explain repair work to customer.
- Set stones
- Produce jewelry using basic jewelry manufacturing skills.
- Identify characteristics of precious metals and gemstones.
- Produce finished jewelry pieces.
- Express ideas through jewelry illustrations.
- Perform jewelry sales associate skills.
- Adapt computer skills acquired as a student to the jewelry industry standards.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other test.)
- Basic math defined as addition, subtraction, multiplication and division with an awareness of algebraic formulas.

MATH LEVEL

Students should have mastered basic math skills and have an awareness of algebraic formulas. For description of basic math and algebra, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Stone Setter, Bench Jeweler, Goldsmith, Silversmith, Jewelry Designer, and Jewelry Sales Representative. Graduates in these occupations repair and/or fabricate jewelry according to customer and/or owner specifications.

STONE SETTER: is a jeweler who has specialized in the setting of stones in mountings, and demonstrates a high skill level, achieved with practice.

BENCH JEWELER: repairs jewelry, with fabrication, stone setting, and manufacturing skills.

GOLDSMITH: works with gold in the repair and manufacture of jewelry.

SILVERSMITH: works with silver in the repair and manufacture of jewelry, utilitarian, and decorative items.

JEWELRY DESIGNER: provides artistic drawings of jewelry designs that meet customer and/or owner approval.

JEWELRY SALES REPRESENTATIVE: sells retail or wholesale jewelry, tools, and/or equipment.

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

- Appraiser
- Graduate Gemologist
- Certified Gemologist
- Gold Metallurgist
- Hand Engraver
- Jewelry Department Manager
- Jewelry Store Owner
- Trade Shop Owner
- Jewelry Equipment Representative

CURRICULUM

The Jewelry Repair and Fabrication Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 33 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-103-101	PC: Overvw Using Word/Excel	1
31-111-310	Jewelry Design/Illustrate	2
31-441-311	Jewelry Repair 1	3
31-441-312	Jewelry Manufacturing 1	3
31-441-313	Stone Setting 1	3
31-441-315	Gemology/Precious Metals	4
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		17

SECOND SEMESTER

31-104-313	Retail Merchandising	3
31-441-321	Jewelry Repair 2	3
31-441-322	Jewelry Mfg Tech 2	3
31-441-323	Stone Setting 2	3
31-441-327	Gemology/Power Engraving	3
31-801-385	Communicating-Writing	1
SEMESTER TOTAL		16

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-441-311 JEWELRY REPAIR 1 ...basic jewelry repair, sizing up, down, and reshanking, soldering heads in place, fabrication of rings and determining stone size in brass alloy, silver, and/or gold objects.

31-441-312 JEWELRY MANUFACTURING 1 ...use common metals, hand tools and equipment use, casting, facinating, electroplating, rubber molds, wax injection models, and production of finished jewelry pieces.

31-441-313 STONE SETTING 1 ...4-Prong Tiffany Setting, Bezel Setting, 6-Prong Oval Setting, Gypsy Setting and 2 End Cap Marquise Setting.

31-441-315 GEMOLOGY/PRECIOUS METALS ...gemological equipment classification, stone physical/optical property determination, stone setting procedures, precious metal content, soldering determination, gold alloys, and gold refinement.

31-441-321 JEWELRY REPAIR 2...different jewelry repair, retipping, rebuilding heads, replacing hears, and adding or replacing stones on brass alloy, silver, and/or gold objects, use of decorative elements to a mounting. (Prerequisite: 31-441-311, Jewelry Repair 1)

31-441-322 JEWELRY MANUFACTURING TECHNIQUES 2 ...a variety of manufacturing techniques, centrifugal casting process, production of a line of jewelry with the use of rubber molds and injection wax. (Prerequisite: 31-441-312, Jewelry Manufacturing 1)

31-441-323 STONE SETTING 2 ...plate setting, construction of a head setting or bright cutting, channel setting and other advanced setting techniques of fancy shaped stones. (Prerequisite: 31-441-313, Stone Setting 1)

31-441-327 GEMOLOGY/POWER ENGRAVING ...scroll design layout, power hand engraver cutting, power graver stone setting, physical/optical property gem stone identification, and gem stone setting procedures.



Descriptions of courses not found on this page can be found in the back of the catalog.

Landscape Horticulture Technician

Program Code 100014

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Landscape Horticulture Technician program prepares a student for employment in the horticulture industry. Instruction will focus on Landscape designing and building skills.

Graduates of the Landscape Horticulture Technician Program will be able to:

- 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 proper maintenance plans
- Determine nutritional requirements of turf grasses and ornamentals
- Analyze soil and its influence on plant life and development
- Write project estimates
- Design and build landscapes
- Use carpentry hand and power tools
- Use masonry hand and power tools
- Deliver a landscape design presentation
- Operate a transit
- Implement a landscape construction design plan
- Install an irrigation equipment plan
- Set automated operating system
- Execute plant diagnostic skills
- Propagate horticulture plants
- Operate computer hardware system
- Use CAD (Computer Aided Design) software
- Write Wisconsin Pesticide Certification exam

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as a Landscape Horticulture Technician in a variety of settings.

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, a graduate may find employment as:

- Grounds Manager
- Sales Representative
- Garden Center Manager
- Pest Control Specialist
- Garden Center Specialist
- Golf Course Maintenance Assistant
- Lawn Care Equipment Operator
- Turf Technician
- Interior Plantscaper

CURRICULUM

The Landscape Horticulture Technician Associate Degree is a two-year, four-semester program. Upon graduation, students will have completed 69 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-001-110	Horticulture-Intro	3
10-001-158	Plant-Woody Ornamental 1	3
10-001-159	Flowers-Herbaceous 1	3
10-001-172	Landscape Maintenance	2
10-606-112	Engineering Applications	1
10-606-121	Sketching-Landscape	2
10-801-196	Oral/Interpers Communication	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-001-120	Plant Nutrition/Fertilizers	1
10-001-153	Plant Culture/Soil Fund	3
10-001-154	Turf Management 1	3
10-001-180	Landscape Construction 1	2
10-606-125	CAD-Landscape	2
10-804-120	Math-Tech Algebra	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-001-170	Pest Management-Integrated	2
10-001-174	Landscape Design Fund 1	3
10-001-181	Landscape Construction 2	3
OR		
10-001-121	Plant Propagation	3
10-104-106	Retail Sales Mgmt	3
10-801-195	Communication-Written	3
Elective		3
SEMESTER TOTAL		17

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 2	3
OR		
10-001-130	Plant-Interior	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
Elective		3
SEMESTER TOTAL		18

SUGGESTED ELECTIVES: Golf Course Management (10-001-150), Landscape Calculations (10-001-165), Horticulture Internship (10-001-151), Survey Site Development (10-607-107).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

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 ...utilizing sketching, landscape 3D CAD design software, develop and build models to scale featuring in-detail land topography, buildings, hardscape, and plants for presentation.

10-001-120 PLANT NUTRITION/FERTILIZERS

...nutritional needs of turfgrasses and ornamentals, special emphasis will be placed on various types of fertilizers and fertilizer programs.

10-001-121 PLANT PROPAGATION ...plant propagation and production techniques.
(Prerequisite: 10-001-110, Intro to Horticulture)

10-001-130 PLANT-INTERIOR ...how to identify indoor tropical plants and blooming plants that are used in interior landscaping. 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. Learn the difference between signs and symptoms and identification of problem plants.
(Prerequisite: 10-001-110, Intro to Horticulture)

10-001-154 TURF MANAGEMENT 1 ...identification of turf grass; maintenance and establishment of various turf grasses according to planned use; problems associated with home lawns, golf courses, other use areas; also maintenance practices.
(Prerequisite: 10-001-110, Intro Horticulture)

10-001-158 PLANT-WOODY ORNAMENTAL 1

...physiology, culture, identification, and use of primarily temperate woody plant materials appropriate for landscapes in northeastern Wisconsin.

10-001-159 FLOWERS-HERBACEOUS 1

...annuals/perennials/roses; using flowers/foilage effectively in the landscape; care of each flower emphasizing selection/tips to best utilize each flower; groundcover/vines included.

10-001-170 PEST MANAGEMENT-INTEGRATED

...various methods to combat plant pests in an environmentally responsible manner; techniques and strategies. (Prerequisite: 10-001-110, Intro to Horticulture; 10-001-154, Turf Management 1)

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.

10-001-174 LANDSCAPE DESIGN

FUNDAMENTALS 1 ...residential design methods utilizing outdoor room concepts: function, design principles, and composition in developing a landscape plan; drafting, site analysis, graphics.
(Prerequisite: 10-606-121, Landscape Sketching)

10-001-180 LANDSCAPE CONSTRUCTION 1

...site conditions, landscape tools, design plan implementation.

10-001-181 LANDSCAPE CONSTRUCTION 2

...working with landscape construction methods.
(Prerequisite: 10-001-180, Landscape Construction 1)

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 1)

10-001-184 LANDSCAPE DESIGN 2 ...design and detail landscape projects with construction documents and estimates. Focus on specialty landscape.
(Prerequisite: 10-001-174, Landscape Design 1)

Descriptions of courses not found on this page can be found in the back of the catalog.

Logistics

Program Code 101822

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Logistics 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, purchasing, international trade, customer service, and logistics management.

Graduates of this program will be able to:

- Compare major transportation modes.
- Respond appropriately to requests for transportation services.
- Perform inventory control.
- Demonstrate familiarity with global trade processes.
- Develop a global business perspective.
- Plan a product using a manufacturing resource planning process.
- Perform supplier selection and evaluation.
- Demonstrate negotiation skills.
- Track commodity market trends.
- Perform logistical mathematical calculations.
- Apply legal and ethical standards pertaining to logistics.
- Monitor service, quality, and cost performance.
- Demonstrate knowledge of the application of supply chain concepts.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate in the program will have the potential for employment as a Buyer/Planner, Claims Analyst, Customer Service Representative, Dispatcher, Inventory Analyst, Inventory Control Specialist, Materials Planner, Production Scheduler, Purchasing Assistant, Rate Analyst, Shipping and Receiving Specialist, and Warehouse Specialist.

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.

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.

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.

RATE ANALYST: compiles and computes freight rates, passenger fares, and other charges for transportation services according to rate tables and transportation regulations.

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.

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

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-103-103	Micro Basics MS Office 1 OR	3
10-103-121	Micro: Word-Introduction AND	1
10-103-132	Micro: Excel-Part 2 AND	1
10-103-141	Micro: Access-Intro	1
10-138-150	Global Business-Fund	3
10-182-110	Materials/Operations Mgmt	3
10-182-157	Logistics Management	3
10-804-101	Math-Business	3
SEMESTER TOTAL		15

SECOND SEMESTER

10-101-141	Accounting-Financial	3
10-104-191	Customer Service Mgmt	3
10-182-109	Transportation-Intro	3
10-182-120	Enterprise Resource Plan/Cont	3
10-801-195	Communication-Written	3
10-809-195	Economics	3
SEMESTER TOTAL		18

THIRD SEMESTER

10-104-110	Marketing Principles	3
10-182-127	Purchasing	3
10-182-130	E-Comm Logistics/Fulfillment	3
10-801-196	Oral/Interpers Communication	3
10-809-199	Psychology-Human Rel Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-138-160	Global Supply Chain	3
10-182-116	Transportation Admin	3
10-182-141	Logistics Internship	3
10-809-197	Society-Amer Contemp Elective	3
SEMESTER TOTAL		15

SUGGESTED ELECTIVES:

International Business Practice Firm (10-102-104), Negotiations (10-182-131), Motor Carrier-Commercial (10-182-166).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-104-191 CUSTOMER SERVICE

MANAGEMENT ...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.

10-138-150 GLOBAL BUSINESS

FUNDAMENTALS ...international business and the global economic environment: fundamental international business activities, and the economic, cultural, and political factors that affect international business.

10-138-160 GLOBAL SUPPLY CHAIN

...overview of international trade: entering the overseas market, distribution, payment, letters of credit, shipping documents, importing, customs house brokers, government requirements, and sources of assistance and information.

10-182-109 TRANSPORTATION-INTRODUCTION

...framework, role, and historical development of transportation; characteristics of railroad, truck, and air transportation; and the pipeline industry.

10-182-110 MATERIALS/OPERATIONS

MANAGEMENT ...operations strategies, materials planning, manufacturing processes, demand forecasting, inventory fundamentals and location decisions.

10-182-116 TRANSPORTATION

ADMINISTRATION ...fundamentals of the administrative aspects of transportation operation; hands-on exercises in freight classification, tariffs, carrier pricing schedules, rates, bills of lading, contracts, and freight claims.

10-182-120 ENTERPRISE RESOURCE

PLAN/CONTROL ...ERP concepts, sales and operations planning, master scheduling, material requirements planning, capacity planning, production control, theory of constraints, Just-in-Time manufacturing, business process integration, project management, and ERP implementation.

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, forecasting, and dealing with vendors.

10-182-130 E-COMM LOGISTICS/FULFILLMENT

...E-Commerce logistics processes, ERP and CRM systems, internet-enabled supply chain management, online order processing and fulfillment models, 2PL activities, e-transportation management solutions, e-procurement, B2B marketplaces and trading exchanges.

10-182-141 LOGISTICS INTERNSHIP

...training and experience through work experience and observation.

10-182-157 LOGISTICS MANAGEMENT

...basic concepts, management levels, elements of inventory control, transportation, warehousing, packaging, material handling and purchasing, and the role order processing plays in the distribution cycle.

Descriptions of courses not found on this page can be found in the back of the catalog.

Machine Tool Operation

Program Code 314201

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay and Marinette campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Machine Tool Operation prepares students to operate machine tools such as engine lathes, milling machines, drill presses, and computer numerical control machines.

Graduates of the Machine Tool Operation Program will be able to:

- Be successfully employed in the trade.
- Safely setup and operate drill presses.
- Safely setup and operate engine lathes.
- Safely setup and operate horizontal and vertical milling machines.
- Safely setup and operate grinding machines.
- Safely setup, operate, and program computer numerical control milling machines.
- Safely setup, 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.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Computer Numerical Controlled (CNC) Operator, Machine Set-Up Operator, Machine Tool Operator, Machinist, or Maintenance Machinist. 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

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

Course No.	Description	Credits
31-420-304	CNC Fundamentals-I	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-347	Cutting Tool Technology	1
31-420-348	Precision Measurement	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		17

SECOND SEMESTER

31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-420-358	CNC Set-Ups	1
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-385	Communicating-Writing	1
31-804-302	Math 2-Trades	1
SEMESTER TOTAL		17

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-420-304 CNC FUNDAMENTALS-I ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines.

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.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw 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.

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.

31-420-348 PRECISION MEASUREMENT ...how to read/measure english and metric, rules, squares surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement.

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers.

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathe operation and vertical, horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers.

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.

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dia. offsets, boring bars, and bar feeding.

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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Machine Tooling Technics

Program Code 324205

TECHNICAL DIPLOMA - TWO YEARS

Offered at the Marinette campus. Admissions, registration, or counselor, and course information: (715) 735-9361. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

A second year of advanced CNC, tool and die, and electrical discharge machining for graduates of the Machine Tool Operation Program.

Graduates of the Machine Tooling Technics Program will be able to:

- Set-up and operate milling machines.
- Know and apply Statistical Process Control (SPC).
- Set-up and operate computerized electrical discharge machines.
- Design and construct jigs, fixtures, dies and molds.
- Set-up and operate grinding machines.
- Set-up and operate sawing machines.
- Set-up and operate drilling machines.
- Complete basic welding processes.
- Use precision measuring practices.
- 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.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Computer Numerical Controlled (CNC) Operator, Jig and Fixture Apprentice/Trainee, Machine Set-Up Operator, Machinist Apprentice/Trainee, Maintenance Machinist, Mold Maker Apprentice/Trainee, Tool and Cutter Grinder, Tool and Die Apprentice/Trainee, and Electrical Discharge Machining (EDM) Operator.

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.

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 such as patterns and machine tool or die parts, usually on a custom basis; analyzes specifications; and determines tooling.

MACHINIST APPRENTICE/TRAINEE: sets up and operates machine tools and fits and assembles parts to make or repair metal parts, mechanisms, tools, or machines.

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.

MOLD MAKER APPRENTICE/TRAINEE: lays out, machines, fits, assembles, and finishes metal products and metal molds for injection or compression molding of plastic or rubber products.

TOOL AND CUTTER GRINDER: sets up and operates cutter grinding machines used for sharpening tools and cutters that are needed in the manufacturing industry; and inspects resharpened tooling.

TOOL AND DIE APPRENTICE/TRAINEE: lays out, machines, fits, assembles and finishes specialized cutting tools used in the mold and die industry as well as dies used in cutting, stamping, and forging processes.

ELECTRICAL DISCHARGE MACHINING (EDM) OPERATOR: sets up and uses Ram or wire EDM machines to manufacture punches, dies, molds as well as production parts.

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

- All-Around Machinist
- Journey Level Machinist
- Pattern Maker
- Mold Maker
- Tool and Die Maker
- CNC Programmer
- Machine Shop Foreperson/Supervisor

CURRICULUM

The Machine Tooling Technics program is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-420-304	CNC Fundamentals-I	3
31-420-345	Machine Shop 1	4
31-420-346	Machine Shop 2	4
31-420-347	Cutting Tool Technology	1
31-420-348	Precision Measurement	1
31-421-352	Blueprint Rdg/Sket-Mach 1	2
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		17

SECOND SEMESTER

31-420-349	CNC Fundamentals 2	3
31-420-356	Machine Shop 3	4
31-420-357	Machine Shop 4	4
31-420-358	CNC Set-Ups	1
31-421-362	Blueprint Rdg/Sket-Mach 2	2
31-422-359	Metallurgy for Machinist	1
31-801-385	Communicating-Writing	1
31-804-302	Math 2-Trades	1
SEMESTER TOTAL		17

THIRD SEMESTER

31-442-350	Welding-Machine Trades	2
31-804-303	Math 3-Trades	1
32-420-300	Mold Die Construction	4
32-420-301	Tool Making	4
32-420-302	Mold Die Design	2
32-420-303	Tooling Design	2
32-420-332	CNC Fundamentals 3	2
SEMESTER TOTAL		17

FOURTH SEMESTER

31-809-301	Social Science Survey	2
32-420-304	Stamping Die Design	2
32-420-305	Machine Applications-Advanced	4
32-420-306	Stamping Die Construction	4
32-420-307	Machining Theory-Advanced	2
32-420-308	Metrology	1
32-420-342	CNC Fundamentals 4	2
SEMESTER TOTAL		17

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-420-304 CNC FUNDAMENTALS-I ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines.

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.

31-420-346 MACHINE SHOP 2 ...safety, measuring tools/layout, powersaw 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.

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.

31-420-348 PRECISION MEASUREMENT ...how to read/measure english and metric, rules, squares surface plates, micrometers, vernier calipers, height measuring instruments, gage blocks, angular measurement, go-no-go gages, comparison measurement; surface finish measurement.

31-420-349 CNC FUNDAMENTALS 2 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, fundamental programming of computer numerically controlled (CNC) milling machines, and CNC turning centers.

31-420-356 MACHINE SHOP 3...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathe operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers.

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.

31-420-358 CNC SET-UPS ...CNC mill and lathe-tool holder selection, loading and unloading tools, work holding, setting part zero, fixture offsets, setting length and dia. offsets, boring bars, and bar feeding.

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.

31-442-350 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.

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.

32-420-301 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.

32-420-302 MOLD DIE DESIGN...interpret mold die prints, types of mold dies; identify mold plates, ejector pins, return pins, sprues, slides, cavities, runners, gates, leader pins/bushings; select material to be molded and design a mold die.

32-420-303 TOOLING DESIGN...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process.

32-420-304 STAMPING DIE DESIGN ...interpret stamp die prints, types of stamp dies; identify die blocks, punches, punch plates, gages, stops, strippers, die shoes; design stamp die.

32-420-305 MACHINE APPLICATIONS-ADVANCED ...maintain/set-up/operate CNC wire/RAM EDM machines, simulate high-speed machining processes, apply superabrasive tooling, 4th axis milling operations, 3 axis turn/mill/drill applications, 3-D surface machining.

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.

32-420-307 MACHINING THEORY-ADVANCED ...electrical discharge machining (EDM), high speed machining concepts, rapid setup and quick change over procedures, abrasive waterjet, abrasive flow, chemical machining, laser and plasma, palletizing systems.

32-420-308 METROLOGY ...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.

32-420-332 CNC FUNDAMENTALS 3 ...CNC production planning, advanced 2-D mill programming, 3-D surface programming for CNC milling, conversational and G-code programming for milling machines, and computer assisted CNC programming for milling operations. (Prerequisites: 31-420-320, CNC Theory 2; 31-420-321, CNC Practice 2)

32-420-342 CNC FUNDAMENTALS 4 ...CNC process modeling, 4th axis indexing, advanced CNC lathe programming, 4th axis CNC wire EDM programming, and CNC fabrication punch/burner programming applications. (Prerequisite: 32-420-332, CNC Fundamentals 3)

Descriptions of courses not found on this page can be found in the back of the catalog.

Marketing

Program Code 101043

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus, with an 18-month accelerated format also available for individuals with employment experience.

Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

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.

Graduates of this program will be able to:

- 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.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Customer Service Representative, Marketing Assistant, Marketing Research Assistant, Sales Promotion Coordinator, or Sales Representative.

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.

MARKET 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 mainly 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.

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

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-102-158	Business-Intro	3
10-103-103	Micro Basics MS Office 1	3
10-104-101	Selling Principles	3
10-104-110	Marketing Principles	3
10-804-101	Math-Business	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		18

SECOND SEMESTER

10-103-141	Micro: Access-Intro	1
10-104-124	Marketing Applications-PC	1
10-104-126	Promotion Principles	3
10-104-191	Customer Service Mgmt	3
10-104-198	Market Research	3
10-801-195	Communication-Written	3
10-801-198	Speech	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-101-141	Accounting-Financial	3
10-104-120	Marketing Info Mgmt	3
10-182-157	Logistics Management	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-102-150	Law-Business	3
10-104-134	Marketing Internship	3
	OR	
10-104-140	Marketing Field Study	3
10-104-143	Marketing-Direct	3
	OR	
10-104-118	E-Commerce Principles	3
10-104-189	Sales Management	3
	Elective	3
SEMESTER TOTAL		15

SUGGESTED ELECTIVES: International Marketing (10-104-148), Consumer Behavior (10-104-176), Selling Techniques-Advanced (10-104-181).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-102-158 BUSINESS-INTRODUCTION

...organization/management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-103-141 MICRO: ACCESS-INTRODUCTION

...database tables, relationships, queries, calculations, aggregate functions, form and report wizards, and compacting. Requires Windows experience.

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, distribution, pricing, promotional decisions, and international marketing strategy planning.

10-104-118 E-COMMERCE PRINCIPLES ...how the Internet and the Web dramatically impact consumers and organizations carry out the marketing function.

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.

10-104-126 PROMOTION PRINCIPLES ...theory and techniques for integrated promotion plan; sales promotion planning; special event coordination; trade shows; advertising: media selection, budgeting, ad creation; direct marketing; public relations; international advertising and promotion.

10-104-134 MARKETING INTERNSHIP ...training in an appropriate setting through actual work experience and observation.

10-104-140 MARKETING FIELD STUDY

...alternative to the internship: in-depth study of an industry, business, career, or project.

10-104-143 MARKETING-DIRECT ...interactive technology, direct marketing vs. general advertising, market segmentation through databases, renting prospect lists, print and broadcast media copy, direct mail, catalogs, telemarketing skills, and script writing.

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

MANAGEMENT ...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.

10-182-157 LOGISTICS MANAGEMENT ...basic concepts, management levels, elements of inventory control, transportation, warehousing, packaging, material handling and purchasing, and the role order processing plays in the distribution cycle.

Descriptions of courses not found on this page can be found in the back of the catalog.

Marketing and Graphic Communications

Program Code 101117

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Marketing and Graphic Communications trains students in electronic publishing, image editing, printing techniques, pre-press processes, graphics photography, illustration, typography, and graphic design concepts.

Graduates of this program will be able to:

- Conduct marketing plan.
- Implement promotional strategies.
- Create designs for print and multimedia.
- Perform electronic pre-press operations.
- Produce four color process and spot color separations.
- Operate printing equipment.
- Assemble a professional quality portfolio.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Desktop Publisher, Graphic Designer, Advertising Assistant, Commercial Art Worker, Layout Designer, Printing Support Worker, Public Relations Assistant, or Pre-Press Technician.

DESKTOP PUBLISHER: produces professional publications using electronic publishing software, scans graphic images, places text and graphics files onto the page, and operates image setters.

GRAPHIC DESIGNER: develops advertising concepts and prepares art for the final printed piece.

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.

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: handles electronic and traditional pre-press operations including process cameras, PMT processing, stripping negatives, plate making, evaluating halftones, color separations, contact printing, special effects halftone production, 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 in the form of handouts, slide art/copy, transparencies, and charts.

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.

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

- Account Executive
- Art Director
- Design Supervisor
- Media Buyer

CURRICULUM

The Marketing and Graphic Communications Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 69 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-111-103	Graphic Workstations	1
10-111-111	Marketing 1-Visual Design	3
10-111-120	Macintosh Publishing	3
10-204-110	Printing-Introduction	3
10-801-195	Communication-Written	3
10-804-101	Math-Business	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-111-101	Macintosh-Image Editing	3
10-111-121	Marketing 2-Visual Design	3
10-111-125	Graphic Reproduction Tech	3
10-111-161	Macintosh Illustration	3
10-111-162	Typography Design/Paper	2
10-801-162	Copywriting-Intro	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-104-107	Marketing Comm-Integrated	3
10-104-191	Customer Service Mgmt	3
10-111-150	Web Graphic Design	3
10-801-196	Oral/Interpers Communication	3
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-111-141	Marketing Comm Internship	3
10-111-142	Graphic Reproduction-Adv	2
10-111-151	Website Design	3
10-111-170	Graphic Design Portfolio	1
10-809-197	Society-Amer Contemp	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		18

SUGGESTED ELECTIVES: Macintosh Systems Management (10-107-159), Macintosh Image Editing-Advanced (10-111-110), Macintosh Multimedia Authoring (10-111-154).

This program is fully eligible for financial aid.

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

...explore the software application of Adobe Photoshop; scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print or the Internet. An introduction to manipulating bitmap images.

10-111-103 GRAPHIC WORKSTATIONS

...computer operating system, basic computer hardware, and basic computer software.

10-111-111 MARKETING 1-VISUAL DESIGN

...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.

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements.

10-111-121 MARKETING 2-VISUAL DESIGN

...apply basic design techniques to an advertising campaign, illustration techniques, lettering and typography, reproducing logos for print production, color for advertising, and preparation of a professional portfolio.

10-111-125 GRAPHIC REPRODUCTION

TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, film stripping, plates, press operation, estimating, and production planning.

10-111-141 MARKETING COMMUNICATIONS

INTERNSHIP ...classroom experience with on-the-job training concluding with an evaluation by employer and instructor.

10-111-142 GRAPHIC REPRODUCTION-

ADVANCED ...various techniques used to print four-color process images including traditional and electronic separations; negative production; stripping, printing, and proofing techniques; color correction; preparing negatives for flexo, gravure, and screen printing.

10-111-150 WEB GRAPHIC DESIGN ...(Adobe ImageReady+Acrobat) internet protocols, website navigation, information architecture and page structure, interface design, optimizing web graphics, GIF animation, prototyping interfaces, and testing browser compatibility. (Prerequisites: 10-111-161, Macintosh Illustration and 10-111-101, Macintosh-Image Editing)

10-111-151 WEBSITE DESIGN ...(Adobe Go-Live+ Acrobat) format text for basic and frames-based websites, build DHTML animation, internet based forms, cascading style sheets, CSS, web publishing, browser testing, and basic site management. (Prerequisites: 10-111-161, Macintosh Illustration and 10-111-101, Macintosh-Image Editing)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images.

10-111-162 TYPOGRAPHY DESIGN/PAPER

...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.

10-111-170 GRAPHIC DESIGN PORTFOLIO

...define portfolios, evaluate current projects, produce artifacts for portfolio, and raise/strike portfolio exhibit.

10-204-110 PRINTING-INTRODUCTION ...printing processes, career traits, electronic publishing, plate making, press operation, printing plates, flexographic press controls, offset press controls, paper cutters, support equipment, job seeking skills, professional portfolios, and job logs.

Descriptions of courses not found on this page can be found in the back of the catalog.

Material Handling Equipment Mechanic*

Program Code 314721

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

* This program will run based on sufficient enrollment.

PROGRAM DESCRIPTION

Material Handling Equipment Mechanic prepares students to service and maintain gasoline, electric, and diesel powered material handling equipment.

Graduates of the Material Handling Equipment Mechanic Program will be able to:

- Repair mechanical drive systems.
- Repair hydraulic systems.
- Repair electrical systems.
- Repair internal combustion engines.
- Reassemble material handling equipment.
- Assess condition, diagnose problems of material handling equipment.
- Communicate technical information.
- Perform scheduled maintenance.
- Use hand and power tools.
- Operate material handling equipment.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Material Handling Equipment Mechanic, Lift Truck Mechanic, Field Service Mechanic, Scheduled Maintenance Mechanic, Farm Equipment Mechanic, Construction Equipment Mechanic, and High Reach Equipment Mechanic.

MATERIAL HANDLING EQUIPMENT

MECHANIC: inspects, maintains, repairs, and adjusts mobile material handling equipment such as front-end loaders, back hoes, trenchers, and skid loaders.

LIFT TRUCK MECHANIC: inspects, maintains, repairs, and adjusts industrial lift trucks within an equipment dealership or for an industrial manufacturing plant.

FIELD SERVICE MECHANIC: performs on-site repairs on mobile material handling equipment while traveling as a mechanic for a material handling equipment dealer.

SCHEDULED MAINTENANCE MECHANIC: performs routine maintenance such as chassis lubrication, oil changes, and engine tune-ups on material handling mobile equipment.

FARM EQUIPMENT MECHANIC: inspects, maintains, repairs, and adjusts farm mobile material handling equipment such as skid loaders, tractors, and bale handlers for equipment dealers and repair services.

CONSTRUCTION EQUIPMENT MECHANIC: inspects, maintains, and repairs construction equipment such as front-end loaders, skid-steer loaders, back hoes, trenchers, and dozers for construction companies and equipment dealerships.

HIGH REACH EQUIPMENT MECHANIC: inspects, maintains, and repairs equipment such as scissor lifts and boom lifts in a dealership or industrial plant.

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

- Field Service Representative
- Journey Level Mechanic
- Lead Mechanic
- Master Mechanic
- Sales and Service Representative
- Shop Foreperson
- Shop Supervisor

CURRICULUM

The Material Handling Equipment Mechanic Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 33 credits.

FIRST SEMESTER

Course No.	Description	Credits
31-442-355	Welding-Maintenance	3
31-472-308	Mobile Equip-Eng Systems	5
31-472-309	Mobile Equip-Eng Repair	5
31-472-312	Mobile Equip-Electric Sys	2
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		17

SECOND SEMESTER

31-419-311	Hydraulics-Applied	2
31-472-318	Mobile Equip-Drive Line	5
31-472-319	Mobile Equip-Vehicle Chas	5
31-472-324	Electrical Vehicle Theory	3
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		16

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-442-355 WELDING-MAINTENANCE ...ferrous and non-ferrous metals, oxy-acetylene, gas tungsten arc, gas metal arc, shielded metal arc, drilling, and threading.

31-472-308 MOBILE EQUIPMENT-ENGINE SYSTEMS ...theory of operation and repair of the internal combustion engine's ignition and fuel systems, covering the conventional point ignition system and the industrial gasoline, LP gas, and diesel fuel systems.

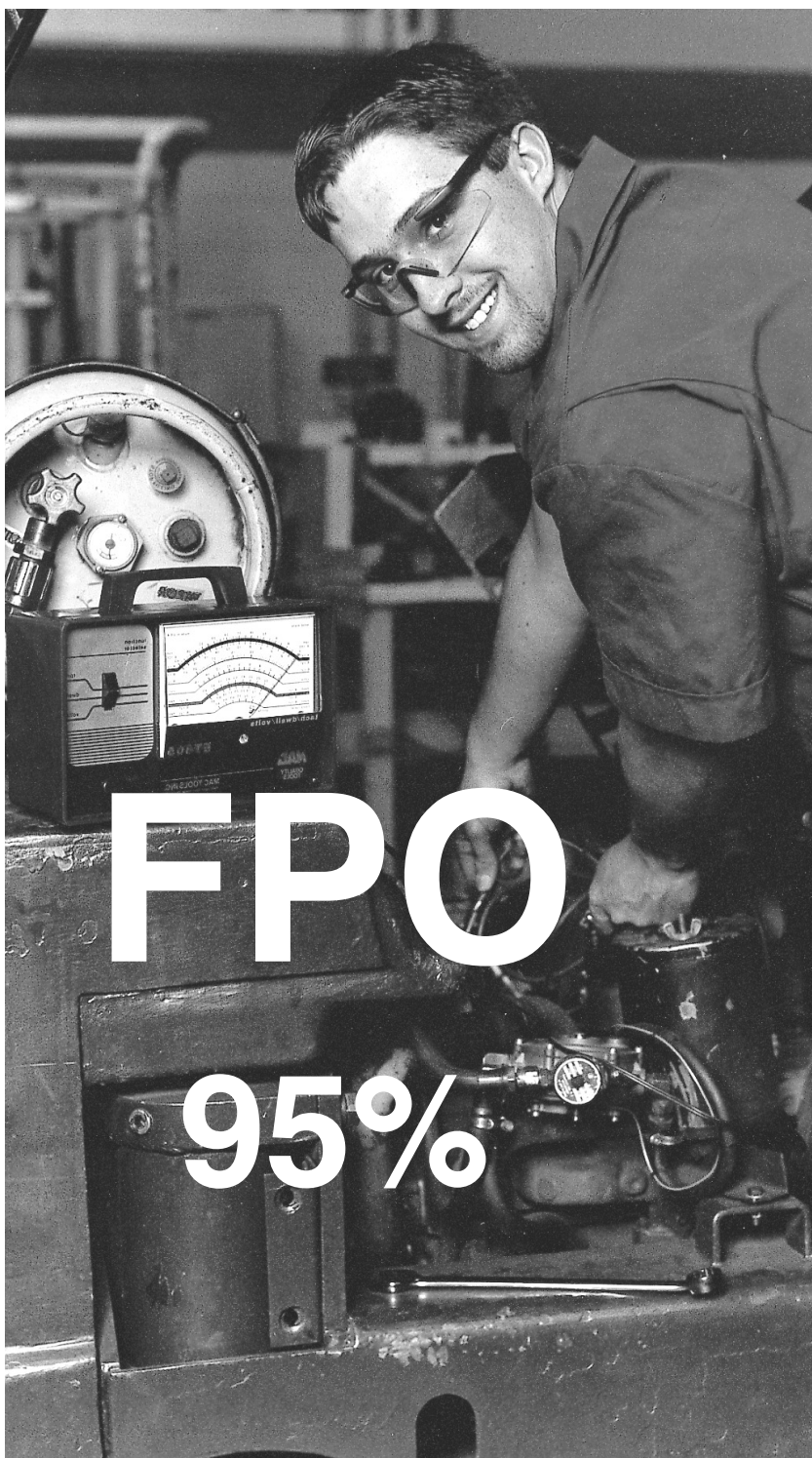
31-472-309 MOBILE EQUIPMENT-ENGINE REPAIR ...internal combustion engines, lubrication systems, cooling systems, valve trains, engine block assemblies.

31-472-312 MOBILE EQUIPMENT-ELECTRICAL SYSTEMS ...AC/DC theory, electrical schematics, battery testing, troubleshooting, system charging/starting, instrument circuits, and electronic ignition circuits.

31-472-318 MOBILE EQUIPMENT-DRIVE LINE ...theory of operation and repair of industrial vehicle engine couplers, transmissions, differentials, and final drives; hands-on training in standard, automatic, and hydrostatic transmissions.

31-472-319 MOBILE EQUIPMENT-VEHICLE CHASSIS ...theory of operation and repair of industrial vehicle chassis systems such as the steering, brake, hydraulic, mast assemblies, and other specialty systems common to the material handling industry.

31-472-324 ELECTRIC VEHICLE THEORY ...electrical testing equipment, basic electric laws, electrical schematic reading, conductors, semiconductor and insulator theory, D.C. motor theory, D.C. controls, SCR and transistor drive systems.



Descriptions of courses not found on this page can be found in the back of the catalog.

Mechanical Design Technician

Program Code 106061

ASSOCIATE DEGREE - TWO YEARS PLUS ONE SUMMER

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free, (800) 422-NWTC.

PROGRAM DESCRIPTION

Mechanical Design Technician 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.

Graduates of the Mechanical Design Technician Program will be able to:

- Draw principal, auxiliary, and sectional views.
- Use mechanical, architectural, metric, and 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 sheetmetal layouts.
- Draw cam layouts.
- Calculate gear train ratios.
- Design simple mechanical devices.
- Draw detail and assembly drawings.
- Prepare electrical/electronic documentation for machine control.
- Construct ladder diagrams.
- Display attitudes consistent with the profession.
- Work in an organized manner, documenting work performed.
- Use Machinery's Handbook as a reference source.
- Create basic models using a parametric modeler.
- Apply various manufacturing methods and techniques as they relate to Mechanical Design.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- A high school background in mathematics, science, and industrial education
- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school Algebra or equivalent
- The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

MATH LEVEL

Students should have mastered algebra skills before entering this program. For a description of algebra skills, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Detailer, Mechanical Design Technician, and Mechanical Drafter.

DETAILER: produces detailed drawings of parts of machines from supplied information on CAD, makes drawing changes to comply with Engineering Change Notices (ECN's)/Engineering Change Requests (ECR's). Works under close supervision.

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 on a CAD system; and may specialize in a specific type of machine or product.

MECHANICAL DRAFTER: has the principal duty of preparing working drawings of machinery and mechanical devices using CAD systems and drafts 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

CURRICULUM

The Mechanical Design Technician Associate Degree is a two-year plus one summer, five-semester program. Upon graduation, a student will have completed 72 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-606-111	Mechanical Design-Exploring	1
10-606-113	CAD	2
10-606-119	Sketching-Technical	2
10-606-162	Solidworks Fundamentals	1
10-801-196	Oral/Interpers Communication	3
10-804-150	Math 1-Tech	5
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-420-111	Manufacturing Tech 1	4
10-606-122	CAD-Mechanical	3
10-606-126	Geometric Dimension/Toleran	2
10-804-160	Math 2-Tech	4
10-806-150	Physics 1-Technical	3
SEMESTER TOTAL		16

THIRD SEMESTER

10-420-121	Manufacturing Tech 2	4
10-606-135	Machine Members-Strength	5
10-606-138	OR Statics	2
10-606-148	AND Materials-Strength	3
10-606-137	Geometry-Descriptive	3
10-606-139	CAD-Electrical Control	3
	Elective	3
SEMESTER TOTAL		18

FOURTH SEMESTER

10-419-170	Fluid Power	3
10-606-141	Design Problems	3
10-606-143	Mechanisms	3
10-801-197	Reporting-Technical	3
	Elective	3
SEMESTER TOTAL		15

SUMMER SEMESTER

10-801-195	Communication-Written	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		6

SUGGESTED ELECTIVES:

3D Parametric Modeling (10-606-160),
Physical Metallurgy (10-806-171).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-420-111 MANUFACTURING TECHNIQUES 1

...safety and considerations, quality assurance, drilling, turning/boring, broaching/sawing, milling/grinding, engineering materials-metals, heat treatment, traditional casting process, and contemporary casting processes.

10-420-121 MANUFACTURING TECHNIQUES 2

...welding methods, mechanical fastening, adhesive joining, non-metal engineering materials, material forming concepts, non-traditional machining methods, automated machining methods, automated assembly methods, flexible manufacturing concepts, tool and fixturing concepts, and CIM. (Prerequisite: 10-420-111, Manufacturing Techniques 1)

10-606-111 MECHANICAL DESIGN-EXPLORING

...philosophy/organization/procedure of the Mechanical Design Technician 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: 10-606-112, Engineering Applications; 10-606-119, Sketching-Technical)

10-606-119 SKETCHING-TECHNICAL ...graphically describe objects without CAD system or mechanical drawing aids; fundamental components of design process: lettering, geometric construction, orthographic projection, isometric sketching, section views, auxiliary views, and dimensioning.

10-606-122 CAD-MECHANICAL ...auxiliary views, section views, intersections and developments, sheetmetal developments, welding drawings, design and working drawings, conventional dimensioning and tolerancing. (Prerequisite: 10-606-113, Computer Aided Drafting)

10-606-126 GEOMETRIC DIMENSIONING/

TOLERANCING ...basic review, geometric dimensioning, datums, material condition symbols, tolerances of form and profile, tolerances of orientation and run out, location tolerances and virtual condition. (Prerequisite: 10-606-113, Computer Aided Drafting)

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: 10-804-160, Math 2-Technical; 10-806-150, Physics 1-Technical)

10-606-137 GEOMETRY-DESCRIPTIVE

...orthographic projection, primary auxiliary views, points, lines, planes, successive auxiliary views, piercing points, intersection of planes and dihedral angles, parallelism and perpendicularity, angles between lines and planes, revolutions, and vectors. (Prerequisite: 10-606-122, Computer Aided Drafting-Mechanical)

10-606-138 STATICS ...force analysis, moments, resultant and equilibrant forces, nonconcurrent-coplanar forces, concurrent-noncoplanar forces, and introduction to stress. (Prerequisites: 10-804-160, Math 2-Technical; 10-806-150, Physics 1-Tech)

10-606-139 CAD-ELECTRICAL CONTROL ...draw and wire circuits, draw and develop simple PLC logic and schematics, draw and utilize components in control circuits, develop and draw control logic from written specification.

10-606-141 DESIGN PROBLEMS ...data gathering, mathematics, and document standard practices. (Prerequisites: 10-606-126, Geometric Dimensioning/Tolerancing; 10-606-135, Machine Members-Strength; 10-606-122, CAD Mechanical)

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: 10-606-122, CAD-Mechanical; 10-806-150, Physics 1-Technical)

10-606-148 MATERIALS-STRENGTH ...effect of static loads on materials; stresses; properties; bolted, riveted, and welded joints; center of gravity; centroids; inertia; simple beams; torsion; shafts, couplings, and keys; combined stresses and columns. (Prerequisite: 10-606-138, Statics)

10-606-162 SOLIDWORKS FUNDAMENTALS

...terminology, software operation and interface, creating basic models, casting and forging models

Descriptions of courses not found on this page can be found in the back of the catalog.

Medical Assistant

Program Code 315091

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor:(920) 498-5733. Course information:(920) 498-5543. Toll free:(800) 422-NWTC

PROGRAM DESCRIPTION

Medical assisting is a multi-skilled allied health profession whose practitioners function as members of the health care delivery team and perform administrative and clinical procedures in ambulatory settings such as medical offices and clinics.

Graduates of the Medical Assistant program will be able to:

- Obtain employment as a Medical Assistant.
- Display professionalism.
- Communicate effectively as a clinician.
- Perform administrative duties.
- Perform clinical duties.
- Apply legal concepts to practice.
- Perform operational functions.
- Provide instruction.
- Write National Medical Assistant Certification Examination.

Students will have on-the-job experience in area clinics during a five-week medical affiliation during the second semester of the program.

Students will be required to purchase uniforms, pay for liability insurance for the medical affiliation course, and provide their own transportation to the medical offices.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- Satisfactory placement in the NWTC mathematics and reading tests or satisfactory placement on the ACT assessment test
- Typing proficiency of 35-words per minute
- An interview or orientation
- A satisfactory medical examination within three months before entering the program or beginning medical affiliation

Medical assistants function as members of the health care delivery team and perform administrative and clinical procedures. Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

Beginning with the January 2001 administration of the Certification Examination, felons are not eligible for the Certification Examination unless the Certifying Board grants a waiver based on one or more of the mitigating circumstances listed in the Disciplinary Standards. After January 1, 2003, CMAs who are currently employed or seeking employment may not use the CMA credential unless their CMA is current. However, Certified Medical Assistants who are temporarily or permanently retired may continue to use the CMA credential for ceremonial purposes only. (reference, AAMA)

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential to be employed as a Clinical Medical Assistant, Claims Analyst, EKG Technician, Laboratory Assistant, Medical Records Clerk, Medical Office Assistant, Pharmacy Aide, and Transcriptionist.

CLINICAL 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 with clinical procedures.

CLAIMS ANALYST: 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.

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.

PHARMACY AIDE: prepares unit dose medication, types and labels outpatient prescriptions, and delivers medications to wards.

TRANSCRIPTIONIST: uses transcribing machines and word processing equipment, proofreads, and verifies documents.

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

- Medical Laboratory Technician
- Medical Office Manager
- Medical Transcriptionist

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
* 31-105-351	Medical Office Business Proc 1	2
31-106-351	Keyboarding-Medical	2
31-509-306	Medical Asst-Pers/Voc Rel	2
* 31-509-307	Medical Office Th/Proc 1	2
31-509-308	Health/Disease 1-Human	3
**31-509-360	Medical Terminology	2
31-801-385	Communicating-Writing	1
31-801-387	Grammar-Business Appl	1
SEMESTER TOTAL		15

SECOND SEMESTER

* 31-105-355	Medical Office Business Proc 2	2
31-509-325	Medical Insurance	2
31-509-326	Medical Affiliation	3
* 31-509-327	Medical Office Th/Proc 2	4
* 31-509-328	Medical Lab Procedures 1	5
SEMESTER TOTAL		16

** May complete #10-510-165, Medical Terminology to meet course requirement for #31-509-360, Medical Terminology.

NOTE: No final grade lower than C is acceptable in any course marked with one 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.

The NWTC Medical Assisting Program(s) is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), on recommendation of the Curriculum Review Board of the American Association of Medical Assistants' Endowment (AAMAE).

Upon graduation, a student will be eligible to take the national examination for Certified Medical Assistants.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-105-351 MEDICAL OFFICE BUSINESS

PROCEDURES 1 ...office procedures applicable to medical offices including receptionist responsibilities, telephoning, appointment scheduling, records management, handling mail, and office maintenance. (Prerequisite: Accepted into Medical Assistant)

31-105-355 MEDICAL OFFICE BUSINESS

PROCEDURES 2 ...maintaining financial records/computer applications in physician's office: patient billing/recordkeeping, word processing/transcription, and payroll for medical office. (Prerequisite: 31-105-351, Medical Office Business Process 1)

31-106-351 KEYBOARDING-MEDICAL

ASSISTANTS ...keying specialized medical documents; rules for technical usage of capitalization, punctuation, abbreviations, symbols, and numbers; and improvement of speed, accuracy, and word processing skills.

31-509-306 MEDICAL ASSISTANT-PERSONAL/

VOCATIONAL RELATIONS ...basic principles of human behavior, the patient/health care provider interaction, medical law and ethics, and the implications of law and ethics for the medical office employee. (Prerequisite: Accepted into Medical Assistant)

31-509-307 MEDICAL OFFICE THEORY/

PROCEDURES 1 ...medical asepsis and infection control, vital signs, the patient examination, first aid, and basic life support. (Prerequisite: Accepted into Medical Assistant)

31-509-308 HEALTH/DISEASE 1-HUMAN

...structure and organization of the body, functions and interaction of all body systems, and abnormalities and diseases of the body.

31-509-325 MEDICAL INSURANCE ...coding and

submitting claims for common medical insurance programs including Medicare, Medicaid, Blue Cross & Blue Shield, CHAMPUS, workers compensation, and private commercial plans. (Prerequisite: 31-509-307, Medical Office Theory/Proc 1)

31-509-326 MEDICAL AFFILIATION ...how

to perform various clinical and administrative procedures under supervision in an affiliating medical facility; includes practical application of all course work. (Co/Prerequisite: 31-105-355, Medical Office Proc 2; 31-509-325, Medical Insurance; 31-509-327, Medical Office Theory/Proc 2; 31-509-328, Medical Lab Procedures 1)

31-509-327 MEDICAL OFFICE THEORY/

PROCEDURES 2 ...clinical skills performed in the doctor's office, sterilization and disinfection, assisting with minor office surgery, administration of medication, venipuncture, x-ray examinations, and specialty examinations. (Prerequisite: 31-509-307, Medical Office Theory/Proc 1)

31-509-328 MEDICAL LABORATORY

PROCEDURES 1 ...safety; laboratory responsibilities; specimen collection and handling; microscope use; perform and interpret laboratory procedures in areas of: urinalysis, microbiology, hematology, coagulation, blood bank, serology, chemistry; and electrocardiography (ECG) administration. (Prerequisite: 31-509-307, Medical Office Theory/Proc 1)

31-509-360 MEDICAL TERMINOLOGY ...spelling,

pronunciation, definition, and abbreviation application; word roots, prefixes, and suffixes; and anatomical structure.

Descriptions of courses not found on this page can be found in the back of the catalog.

Medical Laboratory Technician

Program Code 105131

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Medical Laboratory Technician students learn to perform a variety of laboratory tests to distinguish normal from abnormal results and report results to the physician to facilitate patient care.

Graduates of the Medical Laboratory Technician Program will be able to:

- Be successfully employed in the field.
- Collect blood samples.
- Record laboratory results.
- Maintain laboratory instrumentation.
- Communicate effectively.
- Work cooperatively.
- Behave in an ethical manner.
- Display the knowledge and skills necessary to become proficient in the field.
- Monitor quality control procedures.
- Perform routine analytical laboratory tests.
- Evaluate accuracy of test results obtained.
- Practice standard safety precautions.
- Correlate test results to their clinical significance.
- Demonstrate knowledge of human anatomy and physiology.
- Demonstrate proficiency in chemistry.
- Display knowledge of general microbiology.
- Perform calculations.
- Process blood and other clinical specimens for analysis.

Students are required to purchase uniforms, provide their own transportation to clinical facilities, and pay for liability insurance for the Clinical Practicum course.

MATH LEVEL

Students should have mastered basic math skills and Accuplacer tests for Algebra. For a description of basic math, see the Basic Education section of this catalog.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

Medical Laboratory Technicians perform a wide variety of clinical laboratory tests using instrumentation methods as well as manual techniques. A graduate of the program will have the potential for employment as a Medical Laboratory Technician. Employment opportunities are available in hospitals, clinics, doctor's offices, state and federal labs, and private/commercial clinical laboratories.

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.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Minimum standard composite score of 20 on the ACT assessment
- High school diploma or equivalent
- Two years of algebra or one year of algebra and one year of advanced math (or attain a minimum of 80% on the NWTC Algebra examination)
- One year of biology or equivalent
- One year of chemistry taken within the past five years or equivalent. (All courses should have been completed with a C or better grade.)
- Have completed a medical examination satisfactorily within three months before entering program
- Strongly recommend attendance in the Program Orientation session.
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to Clinical Practicum. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.

NOTE: Students who do not meet the above requirements should consult an NWTC counselor about ways to make up any deficiencies through testing or course work.

CURRICULUM

The Medical Laboratory Technician Associate Degree is a two-year program. Upon graduation, a student will have completed 70 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 10-513-150	Phlebotomy	2
10-801-196	Oral/Interpers Communication	3
* 10-806-163	Chemistry-Bioorganic	3
* 10-806-180	Anatomy/Physiology	4
* 10-806-194	Microbiology-General	3
	Elective	3
SEMESTER TOTAL		18

SECOND SEMESTER

* 10-513-104	Medical Lab-Hematology	5
* 10-513-106	Clinical Lab Chemistry 1	3
* 10-513-111	Med Lab-Microbiology-Clin	5
10-801-195	Communication-Written	3
SEMESTER TOTAL		16

THIRD SEMESTER

* 10-513-101	Medical Lab-Microscopy Clin	3
* 10-513-108	Medical Lab-Immunology-Clin	5
* 10-513-110	Clinical Chemistry 2	4
10-809-195	Economics	3
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		18

FOURTH SEMESTER

* 10-513-140	Clinical Lab Simulation	1
* 10-513-141	Medical Lab-Practicum	11
10-809-196	Sociology-Intro	3
	Elective	3
SEMESTER TOTAL		18

*** NOTE:** No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue in or graduate from this program. If the course is segmented, the successful retake must occur before continuing the sequence.

The Medical Laboratory Technician program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)

8410 W. Bryn Mawr Ave., Suite 670
Chicago, IL 60631
(312)714-8880

A graduate is eligible to take the National Medical Laboratory Technician Board of Registry examination.

SUGGESTED ELECTIVES: Computer Applications (10-103-104), Keyboarding (10-106-145), Medical Terminology (10-510-165).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-513-101 MEDICAL LAB-MICROSCOPY

CLINICAL ...physical, chemical, and microscopic examination of urine and body fluids as performed in the clinical laboratory. (Prerequisite: 10-513-104, Medical Lab Hematology)

10-513-104 MEDICAL LABORATORY-

HEMATOLOGY ...blood, blood diseases, hematopoiesis, principles and procedures for routine and special hematology and coagulation tests. (Prerequisite: 10-513-150, Phlebotomy)

10-513-106 CLINICAL LAB CHEMISTRY 1

...develops skills, process, understanding of laboratory supplies/equipment, safety, pipetting, laboratory math, solutions, dilutions, Quality Control/statistics, electronic, analytical techniques/instrumentation, automation, POCT, procedure writing, therapeutic drug monitoring, toxicology, immunoassays. (Prerequisite: 10-806-163, Chemistry-BioOrganic)

10-513-108 MEDICAL LAB-IMMUNOLOGY-

CLINICAL ...basic theoretical concepts and practical application of immuno-hematologic and serologic laboratory tests; test results interpreted for clinical significance. (Prerequisite: 10-513-104, Medical Lab-Hematology)

10-513-110 CLINICAL CHEMISTRY 2 ...provides

knowledge of skills, process; understanding of carbohydrate metabolism; non-protein nitrogen compounds; electrolytes; trace elements; blood gases; proteins; liver enzymes/markers, cardiac, pancreatic function; lipids; thyroid function; hormones; tumor markers. (Prerequisite: 10-513-106, Clinical Lab Chemistry 1)

10-513-111 MEDICAL LAB-MICROBIOLOGY-

CLINICAL ...bacterial culture and microscopic techniques, antimicrobial susceptibilities, anaerobic culture techniques, mycology, parasitology, and mycobacterial procedures. (Prerequisite: 10-806-194, Microbiology)

10-513-140 CLINICAL LABORATORY

SIMULATION ...review of clinical laboratory testing and instrumentation, overview of laboratory information systems, test prioritization, patient specimen collection. This course prepares the MLT program student to begin the Clinical Practicum. (Prerequisites: 10-513-101, Medical Lab-Microscopy/Clinical; 10-513-108, Medical Lab Immunology-Clinical; 10-513-110, Clinical Chemistry 2)

10-513-141 MEDICAL LAB-PRACTICUM ...clinical

applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisites: 10-513-110, Clinical Chemistry 2; 10-513-111, Medical Lab Microbiology-Clinical; 10-513-108, Medical Lab Immunology Clinical; 10-513-101, Medical Lab-Microscopy Clinical)

Descriptions of courses not found on this page can be found in the back of the catalog.

Medication Assistant

Program Code 305105

ADVANCED EDUCATION FOR QUALIFIED CERTIFIED NURSING ASSISTANTS EMPLOYED IN NURSING HOMES

TECHNICAL DIPLOMA - 100 HOURS, 3 CREDITS

Offered throughout the District, Admissions, registration, or counselor: (920) 498-5733, Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

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.

Graduates of the Certified Medication Assistant program will be able to:

- Maintain employment as a Certified Medication Assistant in a Nursing Home
- Define the legal and ethical responsibilities associated with the role of Medication Assistant
- Identify factors that influence the effects of medications on 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 effect of normal aging on pharmacokinetics

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- At least 18 years of age
- High school diploma or HSED
- Be on State of Wisconsin Nurse Aide Directory, with current Federal eligibility
- Have at least 2000 hours experience in direct patient care within the last 3 years
- Have worked a minimum of 40 hours, within the last 90 days, with the residents to whom the student will be administering medications
- Be employed as a CNA with a recommendation in writing by the director of nursing and the administrator of the agency in which the student will be working during the clinical experience
- Be recommended in writing by two licensed charge nurses, one of whom must be a Registered Nurse

MATH LEVEL

Students should have mastered basic math skills.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment in a Nursing Home as a Certified Medication Assistant

CERTIFIED MEDICATION ASSISTANT:

administers selected medications under the supervision of the nursing staff.

CURRICULUM

The Medication Assistant Technical Diploma is a 100-hour program. Upon graduation, a student will have completed three credits.

FIRST SEMESTER

Course No.	Description	Credits
30-510-355	Nursing Assistant-Basic	3
SEMESTER TOTAL		3

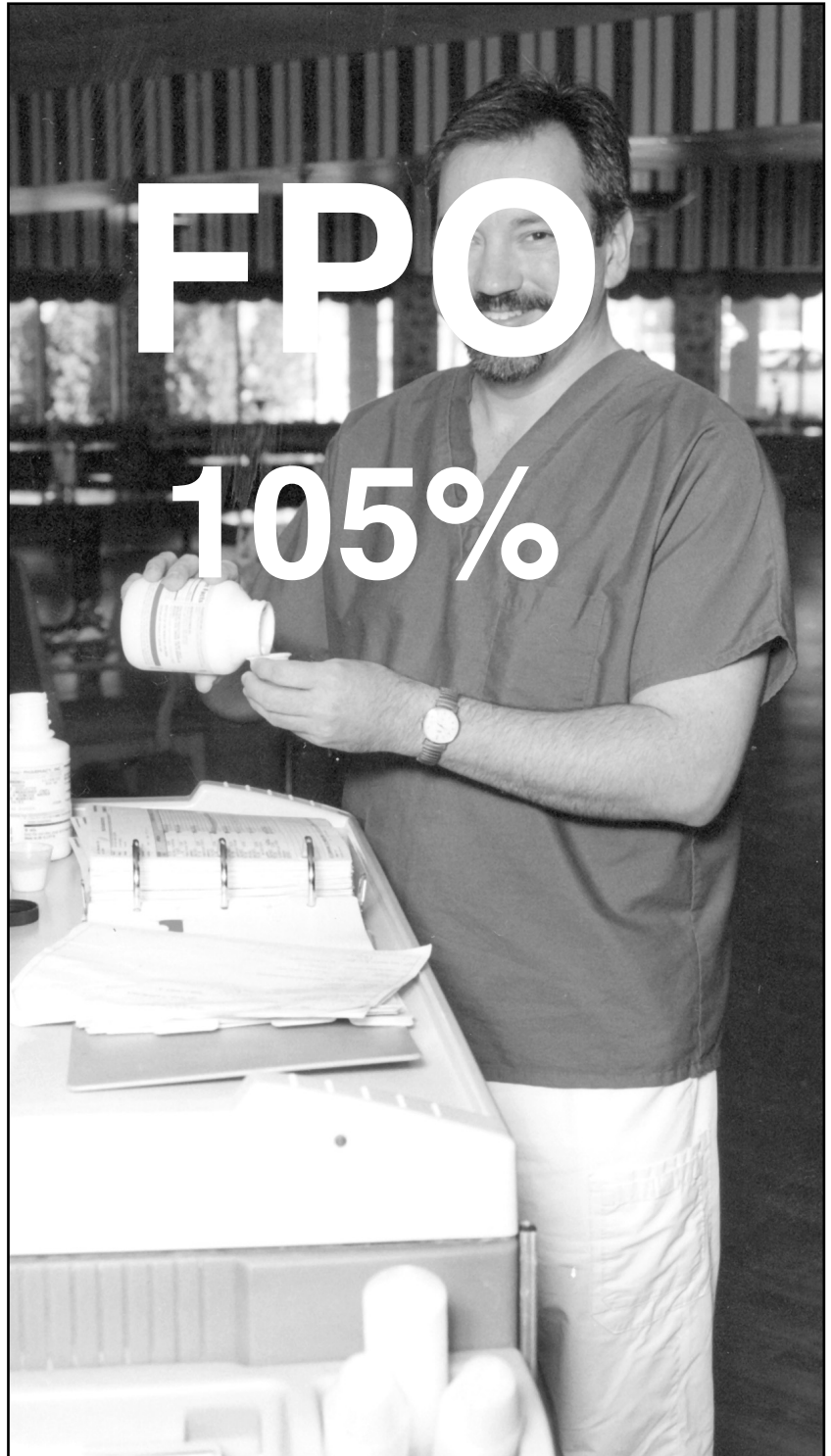
This program is not eligible for financial aid.

COURSE DESCRIPTIONS

These courses provide the opportunity for the student to develop the knowledge, skills, and understanding of:

30-510-301 CERTIFIED MEDICATION ASSISTANT

...knowledge of standard practices related to administration of medications affecting multiple body systems



Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.

Microcomputer Application Software Technician (CIS)

TECHNICAL DIPLOMA - ONE YEAR

Program Code 311075

Offered at the Marinette and Sturgeon Bay campuses. Information in Marinette: (715) 735-9361. Information in Sturgeon Bay: (920) 743-2207.

Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Microcomputer Applications Software Technician emphasizes problem solving using microcomputer hardware and software facilities including DOS and Windows operating systems, Microsoft Word, Microsoft Excel, and Visual BASIC.

Graduates of this program will be able to:

- Solve business problems through the application of microcomputer technology.
- Apply emerging technology.
- Maintain microcomputer hardware.
- Configure microcomputer systems.
- Manipulate file systems using DOS and Windows commands.
- Automate word processing operations using macros and programming techniques.
- Design user-friendly spreadsheet applications.
- Provide end-user support for word processing and spreadsheet software.
- Generate algorithmic solutions to business problems.
- Translate an algorithmic solution into a working program using a high level programming language.
- Document computer programs.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- One year of high school algebra or equivalent
- Ability to use computer keyboard and mouse

MATH LEVEL

Students should have mastered basic math and algebra skills. For a description of basic math, see the Basic Education section of this catalog.

This can also be the first year of the two-year Microcomputer-Specialist (CIS) program on the Green Bay campus.

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as a Microcomputer Consultant, Microcomputer Programmer, or Microcomputer Sales Representative.

MICROCOMPUTER CONSULTANT: provides one-on-one problem solving for users.

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

MICROCOMPUTER SALES

REPRESENTATIVE: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

With additional education and/or work experience, a graduate may find employment as:

- Microcomputer Trainer
- Network Assistant

CURRICULUM

The Microcomputer Applications Software Technician Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-101-102	Accounting-Intro	3
10-107-161	Micro Software 1-Intro	4
10-107-162	Micro Hardware	4
10-801-195	Communication-Written	3
10-804-151	Math-Data Proc Logic	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-102-158	Business-Intro	3
10-107-170	Micro Software 2-Integration	2
10-107-182	Micro Operating Systems	4
10-107-194	Micro Documentation	2
10-801-197	Reporting-Technical	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		17

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-101-102 ACCOUNTING-INTRODUCTION

...what accounting information is, why it is important, and how it is used by economic decision-makers.

10-102-158 BUSINESS-INTRODUCTION

...organization / management process of human resources, production, operations, marketing, distribution, and finances; risk management; ethics/legalistic management; international business; accounting, computers, and data processing.

10-107-161 MICRO SOFTWARE 1-INTRODUCTION

...an introductory course for the Microcomputer Specialist program. Topics include: basic terminology / concepts, fundamentals of Windows and PowerPoint 2000, and extensive coverage of Word and Excel 2000.

10-107-162 MICRO HARDWARE ...computer terminology, component identification, POST, maintenance procedures, system boards, memory, binary and hexadecimal number systems, disk drives, FAT, operating systems, installations and configurations, internet research, troubleshooting and networking. Requires DOS exposure.

10-107-170 MICRO SOFTWARE 2-INTEGRATION

...coverage of the integration of Microsoft Office applications. This will include DDE, OLE, fundamental programming constructs, the Office Object Model, and VBA. VBA constructions will be used to automate OLE. (Prerequisite: 10-107-161, Micro Software 1-Intro)

10-107-182 MICROCOMPUTER OPERATING

SYSTEMS ...creation of microcomputer systems: single machine systems including advanced MS-DOS commands and Windows and multi-user systems including Novell Netware and Unix. (Prerequisite: 10-107-161, Micro Software 1-Intro)

10-107-194 MICRO DOCUMENTATION ...students plan documentation content and delivery methods; develop online, context sensitive, and written documentation, become familiar with ISO 9000 standards, package, PDF files, and create compiled help modules.

10-804-151 MATH-DATA PROCESSING LOGIC

...algorithms, percent applications, interest applications, inventory, depreciation, payroll, hexadecimal arithmetic, flow diagrams, sets, logic, and decision tables.

Descriptions of courses not found on this page can be found in the back of the catalog.

Microcomputer Specialist (CIS)

Program Code 101073

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay and Marinette campuses. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361.

The first year of the program is also offered on the Sturgeon Bay campus: (920) 743-2207. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Microcomputer Specialist program emphasizes problem solving using current software packages, programming in Visual BASIC, hardware configurations, networking, operating systems, and software system design.

A graduate of this program will be able to:

- Apply emerging technology.
- Train end users.
- Manipulate a DOS-based file system using DOS commands.
- Document computer programs.
- Maintain microcomputer hardware.
- Configure microcomputer systems.
- Design user-friendly spreadsheet applications.
- Implement customized relational database systems.
- Automate word processing operations using macros and programming techniques.
- Perform network operations within a UNIX environment.
- Design effective presentations using presentation management software.
- Control the operations of a network.
- Differentiate between various network topologies and protocols.
- Generate algorithmic solutions to business problems.
- Maintain users' Windows-based environments.
- Design batch files in a DOS or network environment.
- Secure employment in the field.
- Solve business problems through the application of microcomputer technology.
- Research technological advances.
- Translate an algorithmic solution into a working program using a high level programming language.
- Design effective documents using Word Processing software.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- One year of high school algebra or equivalency
- Ability to use computer keyboard and mouse

MATH LEVEL

Students should have mastered basic math and algebra skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Microcomputer Consultant, Help Desk/Support Specialist, Microcomputer Programmer, Microcomputer Sales Representative, Microcomputer Trainer, or Network Assistant.

MICROCOMPUTER 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.

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

MICROCOMPUTER SALES REPRESENTATIVE: makes customer calls, establishes customer contacts, identifies customer needs, and prepares proposals.

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

NETWORK ASSISTANT: helps to configure networks, install hardware and software, and train users.

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

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

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-101-102	Accounting-Intro	3
10-107-161	Micro Software 1-Intro	4
10-107-162	Micro Hardware	4
10-801-195	Communication-Written	3
10-804-151	Math-Data Proc Logic	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-102-158	Business-Intro	3
10-107-170	Micro Software 2-Integration	2
10-107-182	Micro Operating Systems	4
10-107-194	Micro Documentation	2
10-801-197	Reporting-Technical	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-107-158	Micro Hardware-Advanced	3
10-107-172	Micro Program-VisualBASIC	4
10-107-181	Micro Software 3-Access	4
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-107-190	Micro Help Desk/End User Sup	2
10-107-191	Micro Software 4-Adv	4
10-107-193	Micro Internship	3
10-107-195	Micro Training	2
10-809-195	Economics	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES:

Micro Programming in "C" (10-107-173),
Network: UNIX/LINUX-Intro (10-107-157).

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 Introduction to Accounting (10-101-102). To discuss this further, please contact an NWTC counselor.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-107-158 MICRO HARDWARE-ADVANCED

...advanced microcomputer hardware maintenance, troubleshooting, diagnosis, and repair.

(Prerequisites: 10-107-162, Microcomputer Hardware; 10-107-182, Micro Operating Systems)

10-107-161 MICRO SOFTWARE 1-INTRODUCTION

...an introductory course for the Microcomputer Specialist program. Topics include: basic terminology / concepts, fundamentals of Windows and PowerPoint 2000, and extensive coverage of Word and Excel 2000.

10-107-162 MICRO HARDWARE ...computer terminology, component identification, POST, maintenance procedures, system boards, memory, binary and hexadecimal number systems, disk drives, FAT, operating systems, installations and configurations, internet research, troubleshooting and networking. Requires DOS exposure.

10-107-170 MICRO SOFTWARE 2-INTEGRATION

...coverage of the integration of Microsoft Office applications. This will include DDE, OLE, fundamental programming constructs, the Office Object Model, and VBA. VBA constructions will be used to automate OLE. (Prerequisite: 10-107-161, Micro Software 1-Intro)

10-107-172 MICRO PROGRAMMING-VISUAL

BASIC ...program definition and design, form design, coding, testing, debugging, interactive programs, sequential and random access files, and an introduction to data structures. Requires prior completion of Software Integration course.

10-107-181 MICRO SOFTWARE 3-ACCESS

...database management and application development including design, automation, and use of relational database management systems using Microsoft Access. (Prerequisites: 10-107-171, Micro Software 2-Excel; 10-107-172, Micro Programming-Visual Basic)

10-107-182 MICROCOMPUTER OPERATING

SYSTEMS ...creation of microcomputer systems: single machine systems including advanced MS-DOS commands and Windows and multi-user systems including Novell Netware and Unix. (Prerequisite: 10-107-161, Micro Software 1-Intro)

10-107-190 MICRO HELP DESK/END USER

SUPPORT ...learners will become familiar with common help desk technology, tools and techniques, and gain hands-on experience.

10-107-191 MICRO SOFTWARE 4-ADVANCED

...exploration, evaluation, and comparison of specialized software packages: advanced word processing with Microsoft Word, HTML coding, Java Script programming, and Java. (Prerequisites: 10-107-172, Micro Programming-Visual Basic; 10-107-161, Micro Software 1-Intro)

10-107-193 MICRO INTERNSHIP ...individual on-the-job training: consulting with users in design, development, testing, debugging, and documentation problems; training in uses of software packages; configuring and installing hardware and networks. Course should be taken during the last semester.

10-107-195 MICRO TRAINING ...students learn 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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Model Building Design & Construction

ASSOCIATE DEGREE - TWO YEARS

Program Code 106142

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Model Building Design & Construction prepares students to build in a variety of three dimensional models, such as architectural, mechanical, product development, prototype, and special effects.

Graduates of the Industrial Model Building Program will be able to:

- Develop planning strategies necessary to translate two-dimensional information into a 3D model.
- 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.
- Apply a variety of industrial finishes on various materials.
- Use critical thinking and problem solving techniques in the construction of a model.
- Effectively estimate the time and cost of a model.
- Create a variety of computer aided drawings using AutoCAD, Solidworks & Mechanical Desktop.
- Manage computer files and utilize a variety of technically related software.
- Create jigs and fixtures necessary for special machining operations.
- Work efficiently as a part of a team, or independently.
- Safely operate all hand and stationary tools typically used in a professional model shop.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- High school background in mathematics and science
- High school algebra or equivalent

MATH LEVEL

Students should have mastered algebra skills before entering this program. For a description of algebra skills, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an entry level Model Builder in the following areas: Architectural, Prototype, Engineering Design, Legal, Props and Special Effects, and Pattern and Mold Making.

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.

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 model will look like the finished product before production begins.

ENGINEERING DESIGN: translates engineering data and vendor information into scale models or CAD models for use with Rapid Prototyping Processes. Usually employed in design and development of new products or systems.

LEGAL MODEL BUILDER: creates models that help win court cases by allowing a judge and jury to see a three-dimensional representation of the scene of an accident, injury, or crime.

PROPS AND SPECIAL EFFECTS MODEL BUILDER: makes models for the movie, television, and stage play industries.

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.

- Architectural Design Model Builder
- Mechanical Prototype Designer
- Computer Numerical Control Machinery Programmer/Operator
- Rapid Prototyping Operator
- Free-Lance Model Builder
- Model Shop Supervisor

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-420-151	Machine Tool-Modelmakers 1	3
10-606-112	Engineering Applications	1
10-606-113	CAD	2
10-606-119	Sketching-Technical	2
10-614-114	Model Building-Intro	4
10-801-196	Oral/Interpers Communication	3
10-804-130	Math-Algebra/Trigonometry	3
SEMESTER TOTAL		18

SECOND SEMESTER

10-420-161	Machine Tool-Modelmakers 2	3
10-614-122	Model Layout/Design	3
10-614-124	Design Visualization	5
10-804-131	Math-Algebra/Inter	3
10-809-197	Society-Amer Contemp	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-614-134	Engineering Models	5
10-614-136	Modeling 3D-CAD	3
10-614-138	CNC Machining-Adv	3
10-801-195	Communication-Written	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-614-144	Model Applications-Adv	4
	OR	
10-614-145	Model Building Internship	4
10-801-197	Reporting-Technical	3
10-806-150	Physics 1-Technical	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		16

SUGGESTED ELECTIVES: Machine Models (10-614-172), Model Finishing (10-614-176), Internship (10-614-195).

This program is fully eligible for financial aid.

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 MACHINE TOOL-MODELMAKERS 1

...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.

10-420-161 MACHINE TOOL-MODELMAKERS 2

...advanced machining and layout skills using a variety of metals utilizing vertical, horizontal, and CNC milling machines, metal lathes, and surface grinders, as well as sheet metal layout and welding basics. (Prerequisite: 10-420-151, Machine Tool-Model Makers 1)

10-606-112 ENGINEERING APPLICATIONS

...basics of a computer system, computer terminology, Windows NT, Microsoft Word, Microsoft Excel, and AutoCAD.

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: 10-606-112, Engineering Applications; 10-606-119, Sketching-Technical)

10-614-114 MODEL BUILDING-INTRODUCTION

...introduction to 3D model building using a variety of materials, machine processes, and fabrication techniques including CNC milling with an emphasis on accuracy, professionalism, and working within specified tolerances.

10-614-122 MODEL LAYOUT/DESIGN ...creation of advanced mechanical and architectural computer aided drawings using AutoCAD, Solidworks, and Surf CAM software to produce 2 axis and 3 axis parts on a CNC milling machine. (Prerequisite: 10-606-113, Computer Aided Drafting)

10-614-124 DESIGN VISUALIZATION ...planning and construction stages of product models and architectural models focusing on fabrication methods, material selection, CNC machining, painting and finishing techniques, and model photography. (Prerequisites: 10-614-114, Model Building-Intro; 10-606-113, CAD)

10-614-134 ENGINEERING MODELS

...engineering/design modeling, power and hand tools, materials and techniques; job responsibilities and relations with other disciplines; constructing engineering/design models; basic mold making; and Rapid Prototyping model processes. (Corequisite: 10-614-114, Model Building-Intro)

10-614-136 MODELING 3D-CAD ...solid modeling (3D drawing) using AutoCAD, Solid works, and Mechanical Desktop; creating isometric, 3D wireframe, 3D surface, and 3D solid models/drawings; rapid prototyping; importing and exporting of data. (Prerequisite: 10-606-113, Computer Aided Drafting)

10-614-138 CNC MACHINING-ADVANCED

...create two and three dimensional drawings, and tool paths using SurfCAM software. Parts will be machined on the CNC milling machine using materials typically used in the model building industry.

10-614-144 MODEL APPLICATIONS-ADVANCED

...safe use of hand and power tools; plastics; materials and techniques; patterns, mold making, and flexible molds; limited run parts; training models; product/prototype model; rapid prototyping.

10-614-145 MODEL BUILDING INTERNSHIP

...cooperative agreement with a professional model making facility in which the student is paid to work for the company while learning on the job to be a professional model maker.

Descriptions of courses not found on this page can be found in the back of the catalog.

Network Specialist (CIS)

Program Code 101078

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Network Specialist teaches students to design, install, configure, and maintain computer networks.

Graduates of this program will be able to:

- Design a local area network (LAN) per specifications.
- Construct a local area network using the required physical components.
- Install network hardware including modems, interface cards, and cabling.
- 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.
- Create effective user environments using Microsoft, Novell, and UNIX/LINUX operating systems.
- Use word processing, spreadsheet, database, and presentation software appropriately.
- Implement a web-based foundation for E-business.
- Develop technical documentation for network configuration and security.
- Communicate technical information effectively.
- Assess the impact of emerging technologies.
- Maintain microcomputer hardware and peripherals.
- Implement and configure wide area network (WAN) services.
- Provide network user support.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- One year of high school algebra or equivalency
- User level familiarity with one or more computer operating environments
- Ability to interact with a computer system (keyboarding or assist device)

MATH LEVEL

Students should have mastered basic algebra skills. For a description of algebra, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Network Support Specialist and Network Administrator.

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 should he or she decide 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 CNE, MSCE, A+, Network+, and CCNA
- Web Developer
- Network Analyst

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-103-103	Micro Basics MS Office 1	3
10-107-163	Network: Structures 1	3
10-107-164	Network: Operating Systems	2
10-801-195	Communication-Written	3
10-804-151	Math-Data Proc Logic	3
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-102-158	Business-Intro	3
10-103-141	Micro: Access-Intro	1
10-107-157	Network: UNIX / LINUX-Intro	3
10-107-162	Micro Hardware	4
10-107-165	Network: Admin-Windows/NT	3
10-107-168	Network: Structures 2	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-107-186	Network: Admin-Inter	4
10-107-188	Network: Applications	4
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-107-144	Information Tech-Emerging	2
10-107-194	Micro Documentation	2
10-107-196	Network: Admin-Adv	4
10-107-198	Network: Internship	3
10-801-198	Speech	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: Network Management & Troubleshooting (10-107-150), Internet Security & Firewalls (10-107-154), Micro Hardware-Advanced (10-107-158), Network: UNIX-Intermediate (10-107-155), Network: Admin-Novell (10-107-166), Micro Programming-Visual Basic (10-107-172), Project and Change Management 1-MS Project (10-107-151), Project and Change Management 2-Project Manager (10-107-152), Project and Change Management 3-Case Studies (10-107-153).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-107-157 NETWORK: UNIX/LINUX-

INTRODUCTION ...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.

10-107-162 MICRO HARDWARE ...computer terminology, component identification, POST, maintenance procedures, system boards, memory, binary and hexadecimal number systems, disk drives, FAT, operating systems, installations and configurations, internet research, troubleshooting and networking. Requires DOS exposure.

10-107-163 NETWORK: STRUCTURES 1 ...cable characteristics and termination, structured cabling systems, OSI reference model, IP addressing and subnetting, address resolution protocol, network architectures, basic router configuration, and routing information protocol.

10-107-164 NETWORK: OPERATING SYSTEMS

...basic OS functions, file systems, OS installation and configuration, configuration of I/O and storage devices, basic computer communications, standard system maintenance procedures, and batch files.

10-107-165 NETWORK: ADMINISTRATION-

WINDOWS/NT ...an introduction to Windows NOS administration and implementation. Learner will install, configure, and administer the Network Operating System in both a member-server environment and an Active Directory environment.

10-107-168 NETWORK: STRUCTURES 2

...configuring routing protocols, access control lists, broadcast and collision domains, Ethernet switches, VLANs, serial protocols, WAN services, protocol analysis, cellular communications, and Internet access alternatives. (Prerequisite: 10-107-163, Network: Structures 1)

10-107-186 NETWORK: ADMINISTRATION-

INTERMEDIATE ...NOS installation, server performance monitoring and tuning, remote client administration, DHCP, WINS, DNS, directory service and domain management, multi-vendor networks, and remote access to networks. (Prerequisite: 10-107-165, Network:Administration-NT)

10-107-188 NETWORK: APPLICATIONS

...fundamentals of project management, software installation in a network environment, application launching options, application and data security, Groupware applications, Network utility software, and effective user support. (Prerequisites: 10-107-166, Network:Administration-Novell; 10-107-167, Network: Administration-NT)

10-107-196 NETWORK: ADMINISTRATION-

ADVANCED ...intranet Web site planning, implementation of Web pages using a variety of development tools, introduction to the principles of electronic commerce. (Prerequisites: 10-107-186, Network:Administration-Intermediate; 10-107-188, Network:Applications)

10-107-198 NETWORK: INTERNSHIP

...individual on-the-job training: consulting with users in design, development, testing, debugging, and documentation problems; training in uses of network facilities; and/or configuring and installing network hardware and software. Course should be taken during the last semester.

Descriptions of courses not found on this page can be found in the back of the catalog.

Nursing Assistant

Program Code 305101

TECHNICAL DIPLOMA-120 HOURS, 3 CREDITS

Offered throughout the District. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Nursing Assistants assist in the care of sick and injured patients under the supervision of the nursing and/or medical staff.

Graduates of the Nursing Assistant program will be able to:

- Obtain employment as a Nursing Assistant or Home Health Aide.
- Display behavior which supports and promotes clients' rights.
- Perform basic nursing/personal care skills.
- Assist clients in attaining and maintaining independence.
- Interact effectively with clients experiencing dementias.
- Pass the written exam for the Nursing Assistant Directory.
- Interact on a one-to-one basis with clients, with sensitivity to their emotional, social, and mental health.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Be at least 17 years old
- Have a medical examination satisfactorily completed within three months before entering program
- An interview/orientation
- Placement in the NWTC mathematics and reading tests
- All students are required to complete an American Heart Association Health Care Provider course prior to program entry.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Nursing Assistant or Home Health Aide.

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.

HOME HEALTH AIDE: performs basic nursing tasks under the supervision and direction of the Registered Nurse in a home health environment.

Individuals with abuse records may not be eligible for employment in nursing homes.

CURRICULUM

The Nursing Assistant Technical Diploma is a 120-hour program consisting of 28 hours of lab, 32 hours of video viewing and 60 hours of clinical in a health care facility. Upon graduation, a student will have completed three credits.

FIRST SEMESTER

Course No.	Description	Credits
30-510-355	Nursing Assistant-Basic	3
SEMESTER TOTAL		3

This program is not eligible for financial aid.

COURSE DESCRIPTIONS

This course provides an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

30-510-355 NURSING ASSISTANT-BASIC ...basic nursing/personal care skills, principles of communication skills, client right and team work with other care givers under the supervision of a licensed nurse. (Prerequisite: Accepted into Nursing Assistant).



Descriptions of courses not found on this page can be found in the back of the catalog.

Nursing-Associate Degree

Program Code 105101

ASSOCIATE DEGREE - TWO YEARS PLUS ONE SUMMER

Offered at the Green Bay and Marinette campuses. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361.

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.

Graduates of the Nursing-Associate Degree program will be able to:

- Think critically.
- Communicate effectively.
- Administer therapeutic nursing interventions.
- Pass NCLEX-RN at or above the State or National average.
- Transfer credits from ADN to BSN programs.
- Obtain employment as a registered nurse.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- One year of algebra, biology, chemistry, pass with a grade "C" or better (if taken more than 5 years ago, student must take Basic Chemistry or demonstrate proficiency),
- Minimum standard composite score of 20 on the ACT assessment (if math or reading is 16 or below, remediation is required) or comparable score on Accuplacer exam
- Complete an interview or orientation
- Have satisfactorily completed a medical examination within three months before beginning the program
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.
- All students must be federally certified in the Wisconsin Nursing Assistant Directory and in good standing on the Wisconsin DHFS Directory.
- Prior to Nursing Process I (10-510-113), completion of Bio-organic Chemistry (10-806-163).

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/ field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of the program who becomes a Registered Nurse has the potential for employment as a Staff Nurse or Charge Nurse in a variety of health care settings.

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 for patients and other staff in a medical facility.

Graduates of this program are eligible to take the Wisconsin State Board Examination for licensure as a Registered Nurse (RN).

Graduates are eligible to apply for direct transfer of credit in the 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.

MATH LEVEL

Students should have mastered basic math skills and Accuplacer tests for algebra. For a description of basic math, see the Basic Education section of this catalog.

NOTE: A student who does not meet the above requirements should consult an NWTC counselor about ways to meet deficiencies through testing or course work.

The Nursing-Associate Degree program is accredited by the National League for Nursing Accrediting Commission (NLNAC), and approved by the Wisconsin State Board of Nursing.

National League for Nursing
Accrediting Commission (NLNAC)
61 Broadway, New York, NY 10006
(212)363-5555 x153, FAX (212)812-0390

Wisconsin Board of Nursing
Dept. of Regulation & Licensing
1400 East Washington St.
P.O. Box 8935, Madison, WI 53708-8935
(608)266-2112

CURRICULUM

The Nursing Associate Degree program is a two-year, one-summer, six-semester program. Upon graduation a student will have completed 72 credits.

SUMMER OR PRIOR SEMESTER

Course No.	Description	Credits
* 10-806-195	Anatomy/Physiology 1	4
SEMESTER TOTAL		4

FIRST SEMESTER

* 10-510-113	Nursing Process 1	3
* 10-510-114	Nursing Process 2	4
10-801-196	Oral/Interpers Communication	3
* 10-806-196	Anatomy/Physiology 2	4
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		17

SECOND SEMESTER

* 10-510-120	Nursing Process 3	4
* 10-510-122	Nursing Process 4	4
10-801-195	Communication-Written	3
* 10-806-197	Microbiology	4
10-809-190	Human Growth/Development	3
SEMESTER TOTAL		18

THIRD SEMESTER

* 10-510-132	Nursing Process 5	5
* 10-510-134	Nursing Process 6	2
* 10-510-136	Nursing Pharmacology-Appl	2
* 10-510-141	Nursing Process 7	5
10-809-196	Sociology-Intro	3
SEMESTER TOTAL		17

FOURTH SEMESTER

* 10-510-150	Nursing Process 8	4
* 10-510-152	Nursing Process 9	4
* 10-510-154	Nursing Process 10	2
	Elective	3
	Elective	3
SEMESTER TOTAL		16

FLEXIBLE LEARNING OPTION: A part-time evening/weekend track is available. This option is scheduled over a four academic year period.

* **NOTE:** No final grade lower than a C is acceptable in the nursing or natural science courses. A student must repeat the particular course with C 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.

Licensed Practical Nurses may receive advanced standing for nursing courses in the first year of the program. Introduction to AD Nursing (10-510-111) must be taken concurrent with second year nursing courses. Call (920)498-5530 for information.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-510-113 NURSING PROCESS 1 ...nursing process; vital signs; client needs: safety, hygiene, mobility, sensory, nutrition, comfort and sleep; health promotion; client teaching; role of nursing; health care system. (Prerequisites: Accepted into Nursing-Associate Degree; 10-806-163, Chemistry-BioOrganic; 10-806-195, Anatomy/Physiology 1)

10-510-114 NURSING PROCESS 2 ...client information systems; medication administration; basic physical examination; infection control; nursing process to meet client elimination; integumentary, oxygenation, fluid/electrolyte; stress/adaptation; life cycle; grief/loss; and cultural needs. (Prerequisite: 10-510-113, Nursing Process 1; Corequisite: 10-806-196, Anatomy/Physiology 2)

10-510-120 NURSING PROCESS 3 ... healthy and at risk woman/family during pregnancy, labor and delivery, and after delivery; the healthy and at risk newborn; trends and issues in maternal child nursing; and family planning. (Prerequisite: 10-510-114, Nursing Process 2; Corequisite: 10-809-190, Human Growth/Development)

10-510-122 NURSING PROCESS 4 ...nursing process used to meet patient psychosocial needs; role of the nurse as provider and manager of care; of care, and member of discipline of nursing. (Prerequisite: 10-510-114, Nursing Process 2; Corequisite: 10-809-190, Human Growth/Development)

10-510-132 NURSING PROCESS 5 ...the nursing process as a method to meet needs of clients with surgical requirements, fluid, and electrolyte imbalance, respiratory dysfunction, altered cellular metabolism, and endocrine dysfunction, excluding diabetes mellitus. (Prerequisites: 10-510-120, Nursing Process 3; 10-510-122, Nursing Process 4; 10-806-197, Microbiology)

10-510-134 NURSING PROCESS 6 ...using the nursing process in meeting the biopsychosocial needs of children/families, preventing illness, restoring health, and implementing teaching/learning needs. (Prerequisites: 10-510-114, Nursing Process 2; 10-806-195, Anatomy/Physiology 1; 10-806-196, Anatomy/Physiology 2; Corequisite: 10-809-190, Human Growth & Development)

10-510-136 NURSING PHARMACOLOGY-APPLIED ...basic concepts; therapeutic classifications; characteristic drug groups; influences on drug effects; application of nursing process; principles of therapy; drug interactions; legal, ethical, economical issues; and OTC drugs. (Prerequisites: 10-806-195, Anatomy/Physiology 1 and 10-806-163, BioOrganic Chemistry OR 31-806-312, Anatomy Structure/Function OR 10-806-180, Anatomy/Physiology)

10-510-141 NURSING PROCESS 7 ...apply the nursing process to meet needs of clients with diabetes mellitus, peripheral vascular disease, hypertension, alterations in coronary conduction, cardiac, urological and gastrointestinal disorders, health maintenance; and health promotion. (Corequisites: 10-510-132, Nursing Process 5; 10-510-134, Nursing Process 6; 10-510-136, Nursing Pharmacology Applied; 10-809-190, Human Growth & Development)

10-510-150 NURSING PROCESS 8 ...nursing process used to meet the client's biopsychosocial needs in neurology, rehabilitation, mobility, burns, emergency care; member of the discipline valuing ethics, legal guidelines, professional practice; and change agent behaviors. (Prerequisite: 10-510-141, Nursing Process 7; Corequisites: 10-510-152, Nursing Process 9; 10-510-154, Nursing Process 10)

10-510-152 NURSING PROCESS 9 ...attitudes toward aging, manager of care role, biopsychosocial needs of older adults, including visual impairment, assessment, clients with complex needs, community-based health care systems, and home health care management. (Corequisite: 10-510-154, Nursing Process 10)

10-510-154 NURSING PROCESS 10 ...role transition strategies, employability traits, NLN role refinement within a realistic clinical environment and NCLEX-RN preparation. (Corequisite: 10-510-150, Nursing Process 8)

Descriptions of courses not found on this page can be found in the back of the catalog.

Office Assistant

Program Code 311061

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay and Marinette campuses. Offered part-time at the Sturgeon Bay campus. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361. Information in Sturgeon Bay: (920) 743-2207. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Office Assistant prepares students for entry-level office positions. Skills are developed in word processing, spreadsheet, presentation graphics, machine transcription, telephone, records management, machine calculation, office procedures, and keyboarding. Credits earned in the program can be applied to the Administrative Assistant Associate Degree program.

Graduates of this program will be able to:

- Provide customer service.
- Manage information.
- Maintain financial reports.
- Create publications/presentations.
- Maintain equipment.
- Process documents.
- Coordinate meeting activities.
- Process mail.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- A keyboarding skill of 20 wpm using the TOUCH method is recommended.

MATH LEVEL

Students should have mastered basic math skills. For a description of math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as Office Assistant, File Clerk, Receptionist, Transcriptionist, Word Processor, or Data Entry/Typist.

OFFICE ASSISTANT: performs a variety of duties related to typing, filing, transcribing, word processing, telephoning, making appointments, recordkeeping, setting up meetings, handling customer relations, entering data, and handling incoming and outgoing mail.

FILE CLERK: works in offices with a great volume of records in which indexing, cross-referencing, filing, retrieving, and charging-out records are important job functions.

RECEPTIONIST: operates simple to complex telephone systems; handles customer relations; and assists with other office work such as filing, typing, processing mail, and scheduling.

TRANSCRIPTIONIST: serves as a word processor using transcribing equipment and word processing software.

WORD PROCESSOR: works in specialized departments of a company producing all forms of documents for the firm: editing, revising, proofreading, and typing with speed and accuracy using word processing software.

DATA ENTRY/TYPIST: enters data and produces correspondence, reports, and documents needed by the office using word processing software.

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

- Administrative Assistant
- Executive Secretary
- Team Leader
- Office Manager

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-103-151	Micro: PowerPoint-Intro	1
10-106-103	Info Process Principles	3
10-106-106	Keyboard-Skills	2
	OR	
10-106-107	Keyboard-Speed / Accuracy 1	1
	AND	
10-106-112	Keyboard-Speed / Accuracy 2	1
10-106-131	Transcription Fund 1	3
10-106-138	Software Skills 1	3
	OR	
10-103-111	Micro: Windows-Introduction	1
	AND	
10-103-121	Micro: Word-Introduction	1
	AND	
10-103-122	Micro: Word-Part 2	1
10-106-153	Professional Profile	3
10-804-101	Math-Business	3
	SEMESTER TOTAL	18

SECOND SEMESTER

10-103-160	Micro: Outlook	1
10-106-113	Keyboard-Speed / Accuracy 3	1
10-106-132	Transcription Fund 2	2
10-106-139	Software Skills 2	2
	OR	
10-103-131	Micro: Excel-Introduction	1
	AND	
10-103-132	Micro: Excel-Part 2	1
10-106-142	Software Projects	3
10-106-143	Office Techniques-Applied	3
10-106-152	Records Management	2
10-106-172	Telephone Skills	1
10-801-195	Communication-Written	3
	SEMESTER TOTAL	18

This program is fully eligible for financial aid.

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-INTRODUCTION

...Windows desktop elements, help features, document management (create, open, save, print), folder and file management (create, delete, move, find file), Web features, search strategies, shortcuts, screen capture, My Computer/Explorer.

10-103-121 MICRO: WORD-INTRODUCTION

...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; and creating headers and footers. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2

...advanced word processing features including merge, columns, tables, templates, styles, borders and clip art, Microsoft draw and WordArt, footnotes and endnotes, and creating a Web page. Requires strong introductory Word skills.

10-103-131 MICRO: EXCEL-INTRODUCTION

...spreadsheet basics, creating/printing worksheets; formulas, functions, copy/move cells, manipulate rows/columns, generate charts. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2

...functions of VLOOKUP and IF, date/time functions, templates, multiple worksheets, linking files through formulas, consolidating worksheets, charts and graphs, datamaps, databases, filters, data tables, and pivot tables. Requires strong introductory Excel skills.

10-103-151 MICRO: POWERPOINT-

INTRODUCTION ...prepare overheads, handouts, and slide shows using Wizards, templates, clipart, WordArt, animation, transitions, and hyperlinks. Requires Windows experience.

10-103-160 MICRO: OUTLOOK ...use email, personal distribution list, signature, attachments, and task list; schedule appointments using calendar; flag, filter, sort, and merge contacts, add voting buttons, delivery receipts, and delivery dates to messages.

10-106-103 INFORMATION PROCESSING

PRINCIPLES ...information processing cycle and workflow, terminology, hardware, software, ergonomics, security, systems, Internet, and career opportunities.

10-106-106 KEYBOARD-SKILLS

...skill development on the alphabetic keyboard, including top-row number keys, and ten-key pad using analytic/diagnostic software in a structured classroom setting. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 20 WPM.

10-106-107 KEYBOARD-SPEED/ACCURACY 1

...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 35 WPM in a 3-minute timing. Requires ability to touch keyboard at 20 WPM.

10-106-112 KEYBOARD-SPEED/ACCURACY 2

...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 40 WPM. Requires ability to touch keyboard at 35 WPM.

10-106-113 KEYBOARD-SPEED/ACCURACY 3

...skill development on the alphabetic keyboard pad using analytic/diagnostic software. Minimum alphabetic keyboard speed to be developed is 45 WPM. Requires ability to touch keyboard at 40 WPM.

10-106-131 TRANSCRIPTION FUNDAMENTALS 1

...demonstrate/expand appropriate language skills, business correspondence formatting, and application of style (punctuation, capitalization, abbreviation, and number usage) while using Business English Language Skills, reference manual, software, and transcription equipment.

10-106-132 TRANSCRIPTION FUNDAMENTALS 2

...build upon Transcription Fundamentals 1 skills to sharpen writing, editing, and proofreading skills. Progressive writing skills move from phrases, clauses, sentences to paragraphs that transfer to mailable business correspondence.

10-106-138 SOFTWARE SKILLS 1 ...the Windows operating system and Word XP including creating, revising, printing, headers/footers, sections, tables, templates, columns, styles, merging, draw and WordArt, and creating a Web page. Requires ability to touch keyboard at 20 WPM.

10-106-139 SOFTWARE SKILLS 2 ...basic and advanced spreadsheet concepts using Excel XP: creating/printing worksheets, formulas, functions, working with multiple worksheets, linking files, charts/graphs, data lists, analysis tools.

10-106-142 SOFTWARE PROJECTS ...applying Windows 2000 and Word XP features to manage and format business documents while exercising decision-making skills and enhancing keyboarding skills in a team setting. Requires experience with Windows, and prior completion of an introductory and intermediate courses in Word.

10-106-143 OFFICE TECHNIQUES-APPLIED

...transcribing documents, maintaining supplies/equipment, processing mail, coordinating meeting activities, and a field experience. Course should be taken during the last semester.

10-106-152 RECORDS MANAGEMENT

...organization and management of records departments, equipment; and major systems of classification: alphabetic, numeric, geographic, subject, chronologic, and micro systems.

10-106-153 PROFESSIONAL PROFILE

...workplace attributes such as attitude, goal setting, habits, and techniques for success and promotion; leadership and organizational skills; and diversity in the workplace.

10-106-172 TELEPHONE SKILLS ...using the telephone effectively and efficiently in the world of work; telephone features, equipment, messaging, cellular technology, pagers, electronic, and voice mail.

Descriptions of courses not found on this page can be found in the back of the catalog.

Paralegal

Program Code 101101

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

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.

Graduates of this program will be able to:

- Describe law office systems and organization.
- Describe state and federal court systems.
- Identify roles and responsibilities of lawyers and paralegals.
- Compare civil, criminal, and administrative procedures.
- Use legal terminology.
- Conduct client interviews.
- Conduct investigations.
- Organize facts and evidence.
- Prepare legal documents.
- Conduct legal and factual research.
- Use correct citation form.
- Comply with rules regarding unauthorized practice of law and professional responsibility.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Ability to use Windows proficiently
- Successful completion of reading and language assessment prior to admission

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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; or as a free-lance paralegal.

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

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
750 North Lake Shore Drive
Chicago, IL 60611.

Phone: (312) 988-5618.

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

Course No.	Description	Credits
10-110-101	Paralegal Intro/Legal Ethics	3
10-110-107	Legal Aspects/Business Org	3
10-801-175	English Composition 1	3
10-801-196	Oral/Interpers Communication	3
	OR	
10-801-198	Speech	3
10-804-149	Math Processes	3
	SEMESTER TOTAL	15

SECOND SEMESTER

10-101-184	Business Finance/Budgeting	3
10-106-141	Information Process-Legal	3
10-110-102	Civil Litigation 1	3
10-110-104	Legal Research	3
10-809-199	Psychology-Human Rel	3
	OR	
10-809-198	Psychology-Intro	3
	SEMESTER TOTAL	15

THIRD SEMESTER

10-110-103	Civil Litigation 2	3
10-110-106	Law-Family (or choice below)	3
10-110-110	Real Estate Law (or choice below)	3
10-110-114	Administration of Estates	3
	(or choice below)	
10-890-101	Critical Thinking-Philos	3
	Elective	3
	SEMESTER TOTAL	18

FOURTH SEMESTER

10-110-105	Legal Writing	3
10-110-142	Paralegal Internship	3
	OR	
10-110-143	Paralegal Field Study	3
10-110-115	Administrative Law	3
	(or choice below)	
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	OR	
10-809-196	Sociology-Intro	3
	Elective	3
	SEMESTER TOTAL	18

CHOICES BELOW: Must take 4 of 8

10-110-106	Law-Family
10-110-110	Real Estate Law
10-110-114	Administration of Estates
10-110-115	Administrative Law
10-110-122	Debtor-Creditor Relations
10-101-165	Income Tax Accounting
10-110-160	Employment Law
10-110-168	Criminal Law

SUGGESTED ELECTIVE: Indian Law (10-110-169).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-101-165 ACCOUNTING-INCOME TAX

...history and research of tax law and regulations; preparation of Federal and State of Wisconsin individual income taxes including forms 1040, 1040A, and 1040AZ, and supporting schedules and forms.

10-110-101 PARALEGAL INTRO/LEGAL ISSUES

...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: 10-110-101, Paralegal-Intro)

10-110-103 CIVIL LITIGATION 2 ...civil litigation including discovery, settlement, trial, and appellate procedure. (Prerequisites: 10-110-101, Paralegal-Intro; 10-110-102, Civil Litigation 1)

10-110-104 LEGAL RESEARCH ...legal research strategies, locating and updating primary and secondary legal authorities, and planning and executing manual and computer-assisted legal research. (Prerequisite: 10-110-101, Paralegal-Intro)

10-110-105 LEGAL WRITING ...advanced writing covering various internal and external legal documents. (Prerequisites: 10-110-101, Paralegal-Intro; 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: 10-110-101, Paralegal-Intro)

10-110-107 LEGAL ASPECTS/BUSINESS ORG ...formation, operation, and dissolution of types of business organizations, and substantive and procedural law involving business organizations. (Prerequisite: 10-110-101, Paralegal-Intro)

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: 10-110-101, Paralegal-Intro)

10-110-114 ADMINISTRATION OF ESTATES

...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: 10-110-101, Paralegal-Intro)

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: 10-110-101, Paralegal-Intro)

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: 10-110-101, Paralegal-Intro)

10-110-142 PARALEGAL INTERNSHIP ...practical, hands-on experience in an approved office. Through the internship, the paralegal student has the opportunity to apply the theories, skills, and techniques that have been studied in the program. (Prerequisite: 10-110-101, Paralegal-Intro)

10-110-143 PARALEGAL FIELD STUDY ...in-depth study of an aspect of the legal field approved by the course instructor; an alternative to internship. (Prerequisite: 10-110-101, Paralegal-Intro)

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.

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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Paramedic - Emergency Medical Technician

TECHNICAL DIPLOMA - ONE YEAR

Program Code 305312

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Paramedic-Emergency Medical Technician students perform advanced level ambulance services. These are both private and municipal ambulance services.

Graduates of the Paramedic-Emergency Medical Technician Program will be able to:

- Perform patient assessment.
- Ventilate patients.
- Manage trauma and medical problems.
- Communicate patient information to hospital.
- Develop paramedic-patient interaction.
- Administer medications.
- Administer intravenous therapy.
- Interpret electrocardiograms.

Successful completion of the Paramedic program prepares and entitles the student to take the State of Wisconsin licensing examination for EMT-Paramedics. A graduate is licensed as a paramedic only after successful completion of the licensing examination.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Be currently licensed as an EMT in the State of Wisconsin
- Have a service affiliation with a paramedic ambulance service to complete the required field experience needed to qualify for licensure
- Students not affiliated with a paramedic ambulance service may be admitted to the program. Such students would be required to complete an additional course within the second semester that would permit the completion of the required field experience necessary to qualify for licensure. Additional course costs would accompany this requirement.
- Students are required to maintain a current CPR card on a two-year renewal cycle to comply with affiliating agency requirements.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Paramedic.

PARAMEDIC: performs advanced level pre-hospital care for paramedic level ambulance services and in hospital emergency departments. These could be either private or municipal employers.

CURRICULUM

The Paramedic Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 24 credits.

FIRST SEMESTER

Course No.	Description	Credits
30-531-320	Paramedic Principles 1	6
30-531-321	Paramedic Clinical 1	4
30-531-324	Paramedic Lab 1	2
SEMESTER TOTAL		12

SECOND SEMESTER

30-531-322	Paramedic Principles 2	6
30-531-323	Paramedic Clinical 2	4
30-531-325	Paramedic Lab 2	2
SEMESTER TOTAL		12

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

30-531-320 PARAMEDIC PRINCIPLES 1 ...roles and responsibilities of the paramedic, human systems and patient assessment, shock and fluid therapy, pharmacology, assessment/management of respiratory and cardiovascular emergencies. (Prerequisite: Accepted into Paramedic-Emergency Medical Tech)

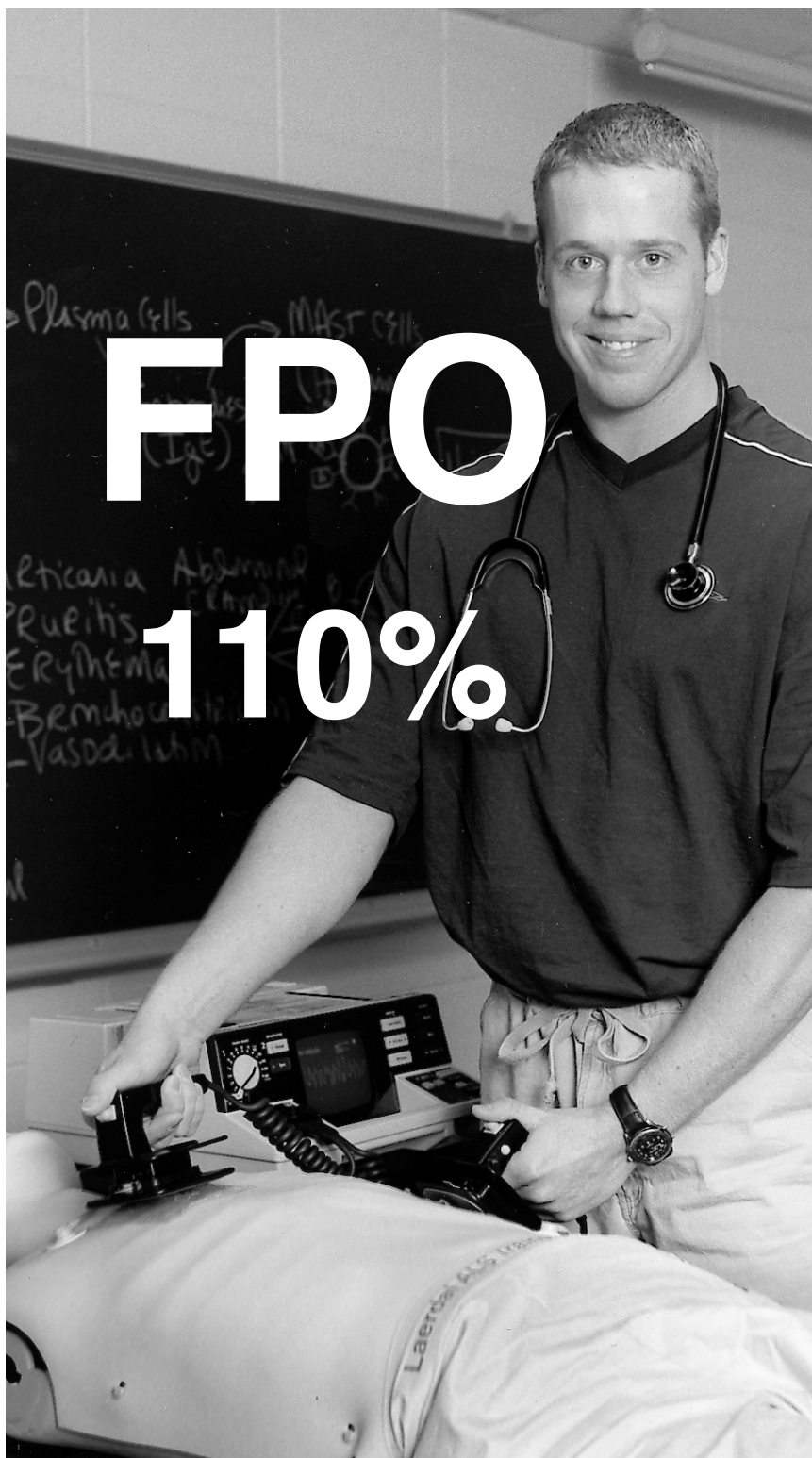
30-531-321 PARAMEDIC CLINICAL 1 ...paramedic-patient interactions, blood samples, patient assessment, intravenous therapy, airway management, medication administration, assessment/management of respiratory emergencies in supervised clinical practice, and skill development in an acute care hospital.

30-531-322 PARAMEDIC PRINCIPLES 2 ...cardiovascular, neurologic, obstetric and gynecologic, soft tissue, musculoskeletal, acute medical, pediatric, and psychiatric emergencies; operational aspects of EMS. (Prerequisite: 30-531-320, Paramedic Principles 1)

30-531-323 PARAMEDIC CLINICAL 2 ...interpretation of electrocardiograms, assessment/management of cardiovascular, medical, trauma, pediatric, and obstetric emergencies in supervised clinical practice in an acute care hospital. (Prerequisite: 30-531-321, Paramedic Clinical 1)

30-531-324 PARAMEDIC LAB 1 ...management of shock, respiratory, and cardiac emergencies; intravenous therapy; medication administration; endotracheal intubation; advanced airway management skills; and EKG monitoring.

30-531-325 PARAMEDIC LAB 2 ...management of advanced cardiovascular emergencies, advanced trauma management skills, pediatric advanced life support skills, report and communication skills, and preparation skills for practical exam. (Prerequisite: 30-531-324, Paramedic Lab 1)



FPO
110%

Descriptions of courses not found on this page can be found in the back of the catalog.

Physical Therapist Assistant

Program Code 105241

ASSOCIATE DEGREE - TWO YEARS PLUS ONE SUMMER

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Physical Therapist Assistant program educates students to carry out patients' rehabilitation programs under the supervision of a physical therapist.

Graduates of the Physical Therapist Assistant program will be able to:

- Perform in a safe manner that minimizes risk to patient, self, and others.
- Conduct self in a responsible manner.
- Interact in a respectful manner.
- Adhere to ethical standards.
- Adhere to legal standards.
- Communicate in ways that are congruent with situational needs.
- Produce documentation to support the delivery of physical therapy services.
- Deliver established patient care to reflect respect for and sensitivity to individual differences.
- Participate in patient status judgments in the clinical environment based on the plan of care established by the physical therapist.
- Perform assessments.
- Discuss the need for modifications to the plan of care established by the physical therapist.
- Perform physical therapy interventions in a technically competent manner.
- Educate others (patients, family, caregivers, staff, students, health professionals) using relevant and effective teaching methods.
- Participate in activities addressing quality of service delivery.
- Participate in addressing patient needs for services other than physical therapy.
- Manage time and financial resources.
- Use physical therapy aides and other support personnel according to legal standards and ethical guidelines.
- Implement a self-directed plan for life-long learning.
- Assist the physical therapist in addressing primary and secondary prevention for individuals and groups.

Students will be required to purchase a name tag, provide their own transportation to clinical facilities, pay for liability insurance for each clinical course, and cover any other expenses related to their fieldwork experiences.

The first year general education and science courses may be taken at Fox Valley Technical College in Appleton; however, all applications must be made through Northeast Wisconsin Technical College.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

Drug testing is required by some clinical facilities.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment 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 of the physical therapist.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Minimum standard composite score of 20 on the ACT assessment
- High school diploma or equivalency
- High school algebra (or attain a minimum of 80% on the NWTC algebra examination)
- One year of biology or equivalent
- One year of advanced biology, chemistry, physics, or equivalent; all with grades of C or better
- Have a medical examination satisfactorily completed within three months before entering the program
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements

MATH LEVEL

Students should have mastered basic math skills and Accuplacer tests for Algebra. For a description of basic math, see the Basic Education section of this catalog.

NOTE: A student who does not meet the above requirements should consult with an NWTC counselor about ways to make up any deficiencies through testing or course work.

CURRICULUM

The Physical Therapist Assistant Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 72 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 10-524-112	Physical Therapist Asst-Intro	2
* 10-524-114	Physical Therapist Asst 1	3
* 10-524-118	PTA-Pathology Concepts	2
10-801-195	Communication-Written	3
10-806-116	Physics-PTA	4
10-806-182	Anatomy/Physiology 1-General	3
SEMESTER TOTAL		17

SECOND SEMESTER

* 10-524-113	PTA-Measurement Test	3
* 10-524-124	Physical Therapist Asst 2	4
10-801-196	Oral/Interpers Communication	3
10-806-188	Anatomy/Physiology 2-PTA	3
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		16

SUMMER SEMESTER

* 10-524-132	Physical Therapist Asst 3	3
* 10-524-133	Physical Therapist Assist-Peds	2
10-809-196	Sociology-Intro	3
SEMESTER TOTAL		8

THIRD SEMESTER

* 10-524-134	Clinical Problems 1	1
* 10-524-137	PTA Fieldwork-1A	1
* 10-524-138	PTA Fieldwork-1B	1
* 10-524-140	Physical Therapist Asst 4	5
* 10-524-144	Physical Therapist Asst 5	4
10-809-195	Economics	3
	Elective	1
SEMESTER TOTAL		16

FOURTH SEMESTER

10-103-104	Computer: Applications	1
* 10-524-136	Health Care Systems	1
* 10-524-145	Clinical Problems 2	1
* 10-524-147	PTA Fieldwork-2A	3
* 10-524-148	PTA Fieldwork-2B	3
* 10-524-149	Ethical Decision Making	1
	Elective	5
SEMESTER TOTAL		15

SUGGESTED ELECTIVES: Sports Medicine/ Athletic Training (10-524-146), and Fitness Test/Prescription (10-524-151).

NOTE: No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue in or graduate from this program. If the course is segmented, the successful retake must occur before continuing the sequence.

The Physical Therapist Assistant Program is fully accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE/APTA)
American Physical Therapy Association
1111 N. Fairfax Street, Alexandria, VA 22314
(703)684-2782

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-524-112 PHYSICAL THERAPIST ASSISTANT-INTRODUCTION ...profession, APTA, physical therapy personnel, practice settings, accreditation, rehabilitation teams, legal practice, problem oriented medical system, SOAP note writing, narrative note writing, terminology, abbreviations, and progress notes. (Prerequisite: Accepted into Physical Therapist Assistant)

10-524-113 PTA-MEASUREMENT/TESTING ...human anatomy, and normal functional motion techniques of goniometry, manual muscle testing, analysis of individual posture and gait patterns. (Prerequisites: 10-524-114, PTA 1; 10-524-112, PTA Intro; 10-806-182, Anatomy/Physiology 1-General; 10-806-116, Physics; Corequisite: 10-806-188, Anatomy/Physiology 2-PTA)

10-524-114 PHYSICAL THERAPIST ASSISTANT 1 ...physical therapy procedures relating to activities of daily living, patient care, assistive devices, vital signs, medical asepsis, body mechanics, correct body positioning, transfers, and basic gait patterns. (Prerequisite: Accepted into Physical Therapist Assistant; Corequisite: 10-806-182, Anatomy/Physiology 1-General)

10-524-118 PHYSICAL THERAPIST ASSISTANT-PATHOLOGY CONCEPTS ...medical and pathological conditions commonly encountered in physical therapy, etiology, symptomatology, treatment concepts, and medical terminology.

10-524-124 PHYSICAL THERAPIST ASSISTANT 2 ...theory, principles, and technical skills of modalities used in physical therapy: hydrotherapy, cryotherapy, therapeutic heat, ultrasound, ultraviolet, electrical stimulation, intermittent compression, traction, paraffin, biofeedback, and massage. (Prerequisites: 10-524-114, PTA 1; 10-524-112 PTA-Intro; 10-806-182, Anatomy/Physiology 1-General; 10-806-116, Physics; Corequisite: 10-806-188, Anatomy/Physiology 2-PTA)

10-524-132 PHYSICAL THERAPIST ASSISTANT 3 ...principles and techniques of therapeutic exercise, specific pathophysiological conditions, and related therapeutic exercise programs. (Prerequisites: 10-524-124, PTA 2; 10-524-113, PTA-Measurement and Testing; 10-806-188, Anatomy/Physiology 2)

10-524-133 PHYSICAL THERAPIST ASSISTANT-PEDIATRICS ...normal and abnormal human development, pediatric pathologies and dysfunctions, and physical therapy treatment approaches. (Prerequisites: 10-524-113, PTA-Measurement Test; 10-806-188, Anatomy/Physiology 2)

10-524-134 CLINICAL PROBLEMS 1 ...Medicare documentation, pharmacology, diversity in clinical practice, supervisory and department functions, importance of the health professional/patient relationship, writing progress notes. (Prerequisites: 10-524-132, PTA 3; 10-524-133, Pediatrics; Corequisites: 10-524-137, PTA Fieldwork 1A; 10-524-138, PTA Fieldwork 1B)

10-524-136 HEALTH CARE SYSTEMS ...current concepts, philosophy, and application of health care systems in the US and their relationships to the practice of physical therapy and health care financing models. (Prerequisites: 10-524-134, Clinical Problems 1; 10-524-137, PTA Fieldwork 1A; 10-524-138, PTA Fieldwork 1B; Corequisite: 10-524-149, Ethical Decision Making)

10-524-137 PHYSICAL THERAPIST ASSISTANT 1A-FIELDWORK ...part-time clinical experience provides an opportunity in a clinical setting to apply theoretical and technical abilities that are expected of entry-level physical therapist assistants. (Prerequisites: 10-524-132, PTA 3; 10-524-133, Pediatrics; Corequisites: 10-524-134, Clinical Problems 1; 10-524-138, PTA Fieldwork 1B)

10-524-138 PHYSICAL THERAPIST ASSISTANT 1B-FIELDWORK ...part-time clinical experience provides an opportunity in a clinical setting to apply theoretical and technical abilities that are expected of entry-level physical therapist assistants. (Prerequisites: 10-524-132, PTA 3; 10-524-133, Pediatrics; Corequisites: 10-524-137, PTA 1A-Fieldwork; 10-524-134, Clinical Problems 1)

10-524-140 PHYSICAL THERAPIST ASSISTANT 4 ...anatomy of the CNS, neuroscience of movement, psychosocial aspects of disability, PNF/NDT rehab techniques, CNS disease pathology, movement re-education, environmental assessment, rheumatic diseases, post-amputee, and cardiopulmonary rehabilitation. (Prerequisites: 10-524-132, PTA 3; 10-524-133, Pediatrics)

10-524-144 PHYSICAL THERAPIST ASSISTANT 5 ...assessment and treatment of orthopedic/musculoskeletal disorders, wound and burn care, and geriatric conditions; and psychosocial aspects of the aging process and terminal illness. (Prerequisite: 10-524-132, PTA 3; Corequisite: 10-524-134, Clinical Problems 1)

10-524-145 CLINICAL PROBLEMS 2 ...discussion of fieldwork situations, interviewing and job-seeking skills, preparation and presentation of an individual case study, complete a competency based, written final examination, and submit two fieldwork journals. (Prerequisites: 10-524-134, Clinical Problems 1; 10-524-138, PTA 1B-Fieldwork; 10-524-137, PTA Fieldwork 1A; Corequisites: 10-524-147, PTA Fieldwork 2A; 10-524-148, PTA Fieldwork 2B)

10-524-147 PHYSICAL THERAPIST ASSISTANT FIELDWORK-2A ...theoretical and technical abilities required in the clinical settings for integration and refinement of practice as a physical therapist assistant. (Prerequisites: 10-524-138, PTA 1B-Fieldwork; 10-524-134, Clinical Problems 1; 10-524-137, PTA Fieldwork 1A; Corequisites: 10-524-145, Clinical Problems 2; 10-524-148, PTA Fieldwork 2B)

10-524-148 PHYSICAL THERAPIST ASSISTANT FIELDWORK-2B ...theoretical and technical abilities required in clinical settings for integration and refinement of practice as a physical therapist assistant. (Prerequisites: 10-524-134, Clinical Problems 1; 10-524-137, PTA Fieldwork 1A; 10-524-138, PTA Fieldwork 1B; Corequisites: 10-524-147, PTA 2A-Fieldwork; 10-524-145, Clinical Problems 2)

10-524-149 ETHICAL DECISION MAKING ...elements of ethics, prototypes of ethical problems, ethical situations encountered in physical therapy/health care, and the application of the six-step process of ethical decision making to PTA Fieldwork experiences. (Prerequisites: 10-524-134, Clinical Problems 1; 10-524-137, PTA Fieldwork 1A; 10-524-138, PTA Fieldwork 1B; Corequisite: 10-524-136, Health Care Systems)

Descriptions of courses not found on this page can be found in the back of the catalog.

Power Engineering and Boiler Operator

Program Code 304281

TECHNICAL DIPLOMA - TWO YEARS PART-TIME

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Power Engineering and Boiler Operator prepares students to manage, operate, and control low and high-pressure boilers and auxiliary systems in factories, plants, and buildings.

Graduates of the Power Engineering and Boiler Operator Program will be able to:

- Be skilled in the management of energy conservation.
- Define industry safety standards and concepts.
- Explain operation of power engineering equipment.
- Complete the (NIULPE) National Institute for Uniform Licensing of Power Engineering
- 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 gem principles to power engineering.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a 3rd or 4th Class Power Engineer/Boiler Operator, Boiler Service Technician, Boiler Installer, or Boiler Chemical Sales Representative.

3RD OR 4TH CLASS POWER ENGINEER/

BOILER OPERATOR: controls the operation of a boiler by reading gauges and varying fuel and water inputs.

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

CURRICULUM

The Power Engineering and Boiler Operator Technical Diploma is a two-year, part-time program. Upon graduation, a student will have completed 14 credits.

Course No.	Description	Credits
31-804-301	Math 1-Trades	2
30-428-341	Power Eng 1-4th Class	1
30-428-342	Power Eng 2-4th Class	1
30-428-343	Power Eng 3-4th Class	1
30-428-331	Power Eng 1-3rd Class	1
30-428-332	Power Eng 2-3rd Class	1
30-428-333	Power Eng 3-3rd Class	1
30-403-338	Power House-Blueprint Rdg	1
30-413-345	Power House-Control Sys	1
30-413-347	Power House-Electric Sys	2
30-428-337	Power House-Economics	1
30-196-348	Power House-Supervision	1
SEMESTER TOTAL		14

Note: A two-year diploma completion schedule is only possible if adequate course enrollment is attained.

This program is not eligible for financial aid.

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 ...footings and foundations, floor plans, elevations, below-grade piping, above-grade piping, isometric piping diagrams, schedules and details, electrical floor plans, ventilating, and air conditioning.

30-413-345 POWER HOUSE-CONTROL

SYSTEMS ...boiler controls, ignition systems, analog logic symbols, burner management sequencing, flame rod and optical systems, 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.

30-428-331 POWER ENGINEER 1-3RD CLASS

...basic information regarding the principles and operational techniques associated with power and heating boilers. The course will prepare the student to take the NIULPE 3rd Class exam. (Prerequisite: 30-428-343, Power Engineering 3-4th Class)

30-428-332 POWER ENGINEER 2-3RD CLASS

...basic information regarding the principles and operational techniques associated with power and heating boilers. The course will prepare the student to take the NIULPE 3rd Class exam. (Prerequisite: 30-428-331, Power Engineering 1-3rd Class)

30-428-333 POWER ENGINEER 3-3RD CLASS

...basic information regarding the principles and operational techniques associated with power and heating boilers. The course will prepare the student to take the NIULPE 3rd Class exam. (Prerequisite: 30-428-332, Power Engineering 2-3rd Class)

30-428-337 POWER HOUSE-ECONOMICS

...guide student in combining newly learned principles with available reference material to determine basic powerhouse economics.

30-428-341 POWER ENGINEER 1-4TH CLASS

...boiler accidents, thermodynamic principles, high pressure steam boilers, boiler construction, boiler fittings, boiler instrumentation and boiler controls.

30-428-342 POWER ENGINEER 2-4TH CLASS

...boiler operation and maintenance, power plant pumps, refrigeration, air compression, and types of plants. (Prerequisite: 30-428-341, Power Engineering 1-4th Class)

30-428-343 POWER ENGINEER 3-4TH CLASS

...prime movers, boiler water treatment, electrical principles and power plant support systems. (Prerequisite: 30-428-342, Power Engineering 2-4th Class)

Descriptions of courses not found on this page can be found in the back of the catalog.

Practical Nursing

Program Code 315101

TECHNICAL DIPLOMA - TWO SEMESTERS PLUS ONE SUMMER

Offered at the Green Bay, Sturgeon Bay, and Marinette campuses. Information in Green Bay: (920) 498-5543. Information in Marinette: (715) 735-9361. Information in Sturgeon Bay: (920) 746-4900.

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.

Graduates of the program will be able to:

- Obtain employment as a practical nurse.
- Pass the NCLEX-PN.
- At completion of program, 100% participate in assisting role of the nursing process as demonstrated by gathering patient data, etc.
- Demonstrate professional behaviors expected in the workplace.
- Become an active member of the profession.

The Practical Nursing program is accredited by:

Wisconsin Board of Nursing
Dept. of Regulation & Licensing
1400 East Washington St.
P.O. Box 8935
Madison, WI 53708-8935
(608)266-2112

A student takes five basic subjects during the first semester to prepare for clinical practice in hospitals and nursing homes. During the following semester and summer session, a student experiences medical nursing, surgical nursing, care of the psychiatric patient, care of children, and care of parents and newborns.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- A score of 80% on math test - math test includes general math, percentages, proportions, and decimals
- An interview/orientation
- A medical examination form satisfactorily completed within three months before entering the program
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.

Individuals with criminal records may be ineligible for licensure.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as a Licensed Practical Nurse (LPN) or a Health Insurance Claims Approver.

LICENSED PRACTICAL NURSE: administers care to individuals whose condition is 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.

Graduation requirements include completion of an approved first aid course.

Graduates of the program are eligible to take the Wisconsin State Board Examination for licensure as a Licensed Practical Nurse (LPN).

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

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

CURRICULUM

The Practical Nursing Technical Diploma is a one-year, one-summer, three semester program. Upon graduation, a student will have completed 36 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 31-510-325	Nutrition-Fam Growth/Dev	2
* 31-510-328	Personal/Voc Issues 1	1
* 31-510-330	Nursing-Basic	4
* 31-510-331	Nursing-Extended Care	5
31-801-386	Communicating Effectively	1
* 31-806-312	Anatomy/Struct-Funct	2
SEMESTER TOTAL		15

SECOND SEMESTER

* 31-510-311	Nursing-Children	3
* 31-510-324	Nursing-Parent/Newborn	3
* 31-510-326	Nursing-Mental Health	3
* 31-510-332	Nursing-Adult 1	5
SEMESTER TOTAL		14

SUMMER SEMESTER

* 31-510-327	Nursing-Adult 2	6
* 31-510-329	Personal/Voc Issues 2	1
SEMESTER TOTAL		7

* **NOTE:** A minimum of a C grade is required for all courses marked with an asterisk (31-806; 31-510).

The following courses may be taken prior to entering the program: *31-806-312 Anatomy Structure/Function, *31-510-328 Personal/Vocational Issues 1, *31-510-325 Nutrition-Family Growth/Development, 31-801-386 Communication- Interpersonal.

* *Fall offerings only.*

It is suggested that a course in Medical Terminology be taken prior to entering the program, #10-510-165 or #31-509-360.

It is also suggested that the NWTC Skills Center be used for developing study skills, test taking skills, reading, and math skills, prior to entering the program.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

31-510-311 NURSING-CHILDREN

...communication; play, safety, assessment procedures; medications, special needs of the newborn/infant, toddler, preschooler, school age, adolescent; disease prevention; and childcare agencies. (Prerequisite: 31-510-332, Nursing-Adult 1)

31-510-324 NURSING-PARENT/NEWBORN

...postpartum care, newborn care, female/male reproductive systems, prenatal care, fetal growth/development, labor/delivery, family-centered maternal/newborn care, adolescent pregnancy, cultural diversity, and family planning. (Prerequisite: 31-510-332, Nursing-Adult 1)

31-510-325 NUTRITION-FAMILY GROWTH/DEVELOPMENT

...the family unit; nutrition, metabolism, and nutrients; nutritional needs during pregnancy; and developmental process: newborn, infant, toddler, preschool child, schoolage child, preadolescent, adolescent, young adult, and adult.

31-510-326 NURSING-MENTAL HEALTH

...emotional and social needs, reaction to stress, nurse/patient relationships, behaviors, nursing interventions and treatment, community resources, and theory and clinical practice. (Prerequisite: 31-510-332, Nursing-Adult 1)

31-510-327 NURSING-ADULT 2

...Practical Nurse's role assisting in evaluating care; focus on mobility, hematologic, nutritional, elimination, neurologic, and sexuality needs of adults. (Prerequisite: 31-510-332, Nursing-Adult 1)

31-510-328 PERSONAL/VOCATIONAL ISSUES 1

...nursing history, interpersonal relationships, employee/employer relationships, nursing ethics, Nurse Practice Act, LPN legal limitations, liability, nursing organizations, and community health organizations.

31-510-329 PERSONAL/VOCATIONAL ISSUES 2

...finding a job, legal and ethical aspects, teamwork, leadership, health care delivery, career mobility, vocational organization, cultural and spiritual differences, and NCLEX-LPN. (Prerequisite: 31-510-332, Nursing-Adult 1)

31-510-330 NURSING-BASIC ...orientation to nursing; patient environment; body mechanics; observing, recording and reporting; patient care; therapeutic Rx; and principles of asepsis. (Prerequisite: Accepted into Practical Nursing)

31-510-331 NURSING-EXTENDED CARE

...assessment of needs and care of long-term patients, the aging process, role changes, societal views, safety and rehabilitation of chronically ill, administration of medicine, theory and clinical experience. (Prerequisite: 31-510-330, Nursing-Basic; Corequisite: 31-806-312, Anatomy Structure/Function)

31-510-332 NURSING-ADULT 1 ...the Practical Nurse's role in identifying the impact of illness on the adult as well as assisting with meeting the pre and post operative comfort, circulatory, respiratory, and urinary needs of adults with an emphasis on planning and implementation. (Prerequisite: 31-510-331, Nursing-Extended Care)

Descriptions of courses not found on this page can be found in the back of the catalog.

Press Technician-Printing

Program Code 312041

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Press Technician-Printing program trains students in pre-press operations, offset presswork, lithographic and flexographic reproduction, film assembly and finishing processes, and electronic publishing.

Graduates of this program will be able to:

- Analyze jobs for operations and materials costs.
- Perform electronic pre-press operations.
- Lay out jobs and generate film for production.
- Create press proofs.
- Set up and operate offset and flexographic printing presses.
- Maintain a safe work environment.
- Create machine operation procedures.
- Pre-flight jobs for various printing processes.
- Perform finishing operations on printed jobs.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Math skills
- Communication skills.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as Bindery/Finishing Operator, Estimator/Production Planner, Plate Mounter, Offset/Flexographic Press Assistant, Offset/Flexographic Press Operator.

BINDERY/FINISHING OPERATOR: operates machines that cut, fold, collate, staple, stitch, trim, and bind pages.

ESTIMATOR/PRODUCTION PLANNER: prepares price quotations, estimates for printing, and preliminary production schedules.

PLATE MOUNTER: makes and mounts plates specific to printing processes and presses.

OFFSET/FLEXOGRAPHIC PRESS ASSISTANT: prepares press for run; runs press proof; adjusts plate, paper feed, tension of paper; ink and water flow.

OFFSET/FLEXOGRAPHIC PRESS OPERATOR: sets up, prepares and operates presses; loads paper, installs printing plates, adjusts guides and control for machine operations.

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

- Graphic Designer
- Pre-Press Technician
- Print Production Supervisor/Manager
- Estimator
- Pre-Flight Specialist

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-111-103	Graphic Workstations	1
10-111-120	Macintosh Publishing	3
10-111-161	Macintosh Illustration	3
10-204-110	Printing-Introduction	3
10-204-111	Printing Operations/Press	3
10-801-195	Communication-Written	3
SEMESTER TOTAL		16

SECOND SEMESTER

10-111-101	Macintosh-Image Editing	3
10-111-125	Graphic Reproduction Tech	3
10-204-120	Printing/Operations-Adv	3
10-204-122	Production Mgmt/Logistics	3
10-804-101	Math-Business	3
SEMESTER TOTAL		15

This program is fully eligible for financial aid.

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

...explore the software application of Adobe Photoshop; scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print or the internet. An introduction to manipulating bitmap images.

10-111-103 GRAPHIC WORKSTATIONS

...computer operating system, basic computer hardware, and basic computer software.

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements.

10-111-125 GRAPHIC REPRODUCTION

TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, film stripping, plates, press operation, estimating, and production planning.

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images.

10-204-110 PRINTING-INTRODUCTION ...printing processes, career traits, electronic publishing, plate making, press operation, printing plates, flexographic press controls, offset press controls, paper cutters, support equipment, job seeking skills, professional portfolios, and job logs.

10-204-111 PRINTING OPERATIONS/PRESS

SET-UP ...press equipment, processors, inks, print quality, job tickets, standard operating procedures, densitometers, printing problems, and trapping situations.

10-204-120 PRINTING/OPERATIONS-ADVANCED

...detailed overview of the flexographic printing and offset lithographic printing processes; learners integrate classroom press operating experiences with interactions with industry.

10-204-122 PRODUCTION MANAGEMENT/PRINTING LOGISTICS ...printing management process, related management skills, leadership skills, quality assessment techniques, and production schedules.

Descriptions of courses not found on this page can be found in the back of the catalog.

Programmer/Analyst (CIS)

Program Code 101071

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

This program prepares students for employment as business applications programmers. Programmers are responsible for writing computer programs to solve business problems.

Graduates of this program will be able to:

- Make oral presentations.
- Develop programs using COBOL.
- Develop programs using RPG.
- Develop applications using a 4GL environment.
- Develop batch programs to generate business reports.
- Develop interactive programs to maintain files.
- Maintain existing programs in COBOL, RPG, and in a 4GL environment.
- Design a normalized database.
- Use development tools.
- Manage small projects.
- Develop control language programs.
- Develop client/server applications with a graphical user interface.
- Work within a team environment.
- Verify numerical output of computer programs.
- Use computer terminology.
- Apply mathematical algorithms and data structures.
- Apply logical and statistical techniques to develop test suites.
- Function in a work environment.
- Write business correspondence.
- Write technical reports.
- Use communications technology.
- Use the System Development Life Cycle (S.D.L.C.).
- Use core accounting terminology.
- Understand business functions and process flow.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- One year of high school algebra or equivalent
- Ability to use computer keyboard and mouse

MATH LEVEL

Students should have mastered basic math and algebra skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as an Applications Programmer/Analyst.

APPLICATIONS PROGRAMMER/ANALYST:

gathers and analyzes facts to determine the problem, writes specifications, designs a solution, and develops the program to implement the solution on the computer.

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

- Database Administrator
- Information Technology Department Manager
- Systems Analyst
- Systems Programmer
- Senior Programmer/Analyst
- Database Analyst
- Applications Project Manager

NOTE: To train entry-level programmers in two years requires a rigorous academic schedule and a strong commitment by the student and by the instructors. The schedule has been carefully designed so that one semester prepares a student for the next semester. Deviation from this schedule can hinder progress and adversely affect the chances of successful completion.

A prospective student should consider taking the Programmer Orientation course (47-107-423). This is a short, non-credit course designed to give the student a clear understanding of the course work, the time commitment required, and the fundamental skills needed to be successful in the first semester. To help a student make an intelligent decision about the future and prepare for the rigors of the program, a section of Programmer Orientation is strongly encouraged.

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-101-110	Accounting 1	4
10-107-110	Computer: Program 1-COBOL	4
10-107-112	Computer: Concept/Appl	3
10-801-195	Communication-Written	3
10-804-151	Math-Data Proc Logic	3
SEMESTER TOTAL		17

SECOND SEMESTER

10-107-120	Computer: Program 2-COBOL	4
10-107-123	Computer: Database Concepts	4
10-801-196	Oral/Interpers Communication	3
10-801-197	Reporting-Technical	3
10-804-161	Math-Data Proc Alg/Stat	3
SEMESTER TOTAL		17

THIRD SEMESTER

10-107-130	Computer: Program 3-RPG	4
10-107-131	Computer: Systems Analy/Des	4
10-107-133	Computer: Control Language	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		17

FOURTH SEMESTER

10-107-140	Computer: Program 4-4GL	3
10-107-141	Computer: Adv Prog Proc	3
10-107-142	Computer: Prog/Analyst Intern	2
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		17

SUGGESTED ELECTIVES: RPG Programming-Advanced (10-107-143), Micro Programming in "C++" (10-107-173), Computer: Javascript-Intro (10-107-103), Computer: Java-Intro (10-107-101), Computer: HTML-Intro (10-107-104), Computer: Java Applets-Intro (10-107-105), Micro Programming-Visual Basic (10-107-172).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-107-110 COMPUTER: PROGRAMMING 1-COBOL ...programming and problem solving using the COBOL language (ANSI-85), design and develop COBOL report programs using structured techniques including table handling. (Corequisites: 10-107-112, Computer:Concepts/Applications; 10-804-151, Math-Data Proc Logic)

10-107-112 COMPUTER: CONCEPTS/APPLICATIONS ...hardware components of a computer system, computer software, file and database processing and management, communications, management information systems, the information systems life cycle, computer career opportunities, and computer trends and issues.

10-107-120 COMPUTER: PROGRAMMING 2-COBOL ...advanced concepts and techniques using COBOL, problem definition, job streams, table processing, control breaks, sequential/random access file processing, interactive file update functions, data verification, on-line programming techniques. (Prerequisite: 10-107-110, Computer:Programming 1-COBOL)

10-107-123 COMPUTER: DATABASE CONCEPTS ...data and its function; traditional, hierarchical, network, relational data models; relational algebra, logical files, structured query language, normalization, database constraint; database management systems (DBMS) functions and applications. (Prerequisites: 10-107-110, Computer:Programming 1-COBOL; 10-107-112, Computer:Concepts/Applications)

10-107-130 COMPUTER: PROGRAMMING 3-RPG ...batch report and on-line programming techniques using the RPG IV language, system utilities, applications systems, file maintenance techniques, subprograms, and program maintenance skills. (Prerequisite: 10-107-120 Computer:Programming 2-COBOL)

10-107-131 COMPUTER: SYSTEMS ANALYSIS/DESIGN ...system development methodologies, analysis and design tools, skills in analysis of business problems, overview of design considerations for user interface, application of database methods, testing methods, and documentation requirements. (Prerequisites: 10-107-120, Computer:Programming 2-COBOL; 10-107-123, Computer:Database Concepts)

10-107-133 COMPUTER: CONTROL LANGUAGE PROGRAMMING ...basic functions of system/job control language; development of CL programs to utilize variables, control program flow, display menus/messages, handle error conditions, and access databases. (Prerequisite: 10-107-120, Computer:Programming 2-COBOL)

10-107-140 COMPUTER: PROGRAMMING 4-4GL ...application system development using a fourth generation language, table creation/maintenance, screen designing, interactive program development, report programming/generating, menu designing/programming, and trigger processing. Requires three semesters of programming, one of which is advanced. (Prerequisites: 10-107-123, Computer:Database Concepts)

10-107-141 COMPUTER: ADVANCED PROGRAMMING PROCEDURES ...principles and design of (1) database-based application on systems, (2) event-driven GUI programs, (3) client-server application systems. Requires three semesters of programming, one of which is advanced (Prerequisites: 10-107-123, Computer:Database Concepts; 10-107-131, Computers:Systems Analysis/Design)

10-107-142 COMPUTER: PROGRAMMER/ANALYST INTERNSHIP ...scheduling and management in a business environment through an individual project assignment. Course should be taken after completing all technical courses scheduled for the first three semesters.

Descriptions of courses not found on this page can be found in the back of the catalog.

Respiratory Care Practitioner

Program Code 105151

ASSOCIATE DEGREE - TWO YEARS PLUS ONE SUMMER

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Respiratory Care Practitioner trains students in the diagnosis, treatment, and rehabilitation of patients with chronic and acute diseases of the heart and lungs.

Graduates of the Respiratory Care Practitioner Program will be able to:

- Be employed in the field of respiratory care.
- Initiate and conduct prescribed therapeutic procedures.
- Modify prescribed therapeutic procedures.
- Demonstrate technical competence.
- Demonstrate a positive work attitude.
- Demonstrate competency in Physics.
- Demonstrate competence in Microbiology Theory.
- Demonstrate competence in Anatomy/Physiology.
- Demonstrate competence in Cardiopulmonary/Renal Physiology.
- Respond positively to constructive criticism.
- Demonstrate initiative.
- Demonstrate interpersonal communication skills.
- Administer quality respiratory care.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Minimum standard composite score of 20 on the ACT assessment
- High school diploma or equivalent
- High school algebra (or attain a minimum score of 80% on the NWTC Algebra examination)
- One year of biology or equivalent
- One year of chemistry or equivalent (within the last 5 years)
- One year of physics or advanced mathematics (all with grades of C or better)
- Complete an interview or orientation
- A medical examination satisfactorily completed within three months before entering the program
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.

MATH LEVEL

Students should have mastered basic math skills and Accuplacer tests for algebra. For a description of basic math, see the Basic Education section of this catalog.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Respiratory Care Practitioner in the hospital setting as a Staff Therapist, a Pulmonary Rehabilitation Therapist, a Perinatal/Pediatric Therapist, a Pulmonary Function Technologist/Therapist, a Sleep Disorder Center Technician, a Shift Supervisor, and a Department Manager. Outside of the hospital setting, a graduate will have the potential for employment as a Home Care Therapist and/or Manager, a Nursing Home Therapist, Respiratory Care Educator, and Medical Equipment Supplies Salesperson.

STAFF THERAPIST (hospital setting): performs all respiratory care modalities and monitors life-support systems in all areas of the hospital during a twenty-four hour period.

PULMONARY REHABILITATION THERAPIST: works in conjunction with other allied health practitioners and physicians with patients affected by chronic lung/heart disease, with a goal to improve the quality of life for these special patients. A graduate would work with a variety of age groups and physical impairments.

PERINATAL/PEDIATRIC THERAPIST: (considered a specialized area of expertise) works in a neonatal intensive care unit, stepdown unit with children and their families, as well as the physicians and nurses assigned to the same units.

PULMONARY FUNCTION TECHNOLOGIST/THERAPIST: works in a diagnostic laboratory setting that emphasizes the testing of lung dysfunction via a variety of pulmonary tests and stress tests, and may also be required to draw arterial blood samples.

SLEEP DISORDER CENTER TECHNICIAN: (considered a specialized area of practice) performs and monitors tests designed to detect specific sleep disorders, working closely with physicians, patients, and family members.

SHIFT SUPERVISOR: a first-line management position, supervises the activities and performance of respiratory care practitioners assigned to a specific shift. Many managerial skills and duties are required in this capacity.

DEPARTMENT MANAGER: a mid-level management position, is responsible for the overall managerial duties and supervision of all departmental employees in the general hospital environment and the specialty departments.

HOME CARE THERAPIST/MANAGER:

employed by a home health care agency, usually outside the hospital setting, makes visits to patients in their homes to check equipment setups, adherence to a prescribed therapy, and medication plans. The manager supervises and is responsible for all services and personnel utilized in the home health company. Traveling and working hours will vary depending upon patient location and needs.

NURSING HOME THERAPIST: (a new role for the respiratory care profession) performs and monitors the respiratory care modalities being administered to nursing home patients.

RESPIRATORY CARE EDUCATOR: works in clinical or classroom settings either as a full-time or part-time instructor for a respiratory care practitioner program, and typically requires advanced respiratory care credentials and education.

MEDICAL EQUIPMENT AND SUPPLIES SALES REPRESENTATIVE:

employed by a specific medical company as a sales representative for all medical equipment/supplies offered by that company, or may specialize in an area of equipment and supplies. Salary is variable and travel can be extensive.

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

- Electric Physiology Lab Technician
- EKG Technician
- Physician Assistant

The Respiratory Care Practitioner program is accredited by the Committee on Accreditation for Respiratory Care (CoARC)

1248 Harwood Road
Bedford, TX 76021-4244
(817)283-2835

A graduate is eligible to take the National Board for Respiratory Care Credentialing Examinations.

NOTE: A student who does not meet the above requirements should consult an NWTC counselor about ways to make up any deficiencies through testing or course work.

CURRICULUM

The Respiratory Care Practitioner Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 72 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 10-515-111	Respiratory Care-Intro	2
10-801-196	Oral/Interpers Communication	3
* 10-806-115	Physics-RCP	3
* 10-806-182	Anatomy/Physiology 1-General	3
* 10-806-194	Microbiology-General	3
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		17

SECOND SEMESTER

* 10-515-125	Respiratory Care Tech 1	3
* 10-515-151	Pharmacology	2
10-801-195	Communication-Written	3
* 10-806-189	Physiology-Cardio/Renal	4
10-809-196	Sociology-Intro	3
	Elective	3
SEMESTER TOTAL		18

SUMMER SEMESTER

* 10-515-132	Respiratory Care Tech 2	3
* 10-515-139	Respiratory Care Clinical 1	2
SEMESTER TOTAL		5

THIRD SEMESTER

* 10-515-133	Pulmonary Function	3
* 10-515-134	Cardiopulmonary Diseases	3
* 10-515-138	Ventilation-Mechanical	3
* 10-515-146	Respiratory Care Clinic	6
	Elective	1
SEMESTER TOTAL		16

FOURTH SEMESTER

* 10-515-143	Critical Care	3
* 10-515-147	Respiratory-Neonatal/Ped	2
* 10-515-159	Respiratory Care Clinical 3	6
* 10-809-195	Economics	3
	Elective	2
SEMESTER TOTAL		16

SUGGESTED ELECTIVES: Clinical Simulation Review(10-515-162), Clinical Simulation Review 2 (10-515-163), and Computer Applications(10-804-182).

NOTE: No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue or graduate from this program. If the course is segmented, the successful retake must occur before continuing the sequence.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-515-111 RESPIRATORY CARE-INTRODUCTION

...Health Care Delivery Systems, Patient/Practitioner Education, Respiratory Care/Services, Medical Terminology, Patient/Practitioner Safety, Communication Skills, Medical Record Keeping, Charting Methods, Infection Control, Patient Care Ethics, and Medical Gas/Cylinder Safety.

10-515-125 RESPIRATORY CARE TECHNOLOGY 1

...cardiovascular system, bedside assessment, gas exchange/transport, medical gas therapy, humidity/bland aerosol therapy, aerosol drug therapy. (Prerequisites: 10-515-111, Respiratory Care-Intro; 10-806-115, Physics-RCP)

10-515-132 RESPIRATORY CARE TECHNOLOGY 2

...rationale and indications of incentive spirometry, chest physiotherapy, breathing exercises, non-invasive patient monitoring techniques, pulmonary rehabilitation, home-care methodologies, rationale and equipment utilized for CPAP, and manual ventilation. (Prerequisite: 10-515-125, Respiratory Care Technician 1)

10-515-133 PULMONARY FUNCTION TESTING/EVALUATION

...advanced diagnostics of cardiopulmonary disorders via complete pulmonary function testing, pulmonary stress testing, and arterial blood gas analysis and instrumentation. (Prerequisite: 10-806-115, Physics RPC; Corequisite: 10-515-132, Respiratory Care Tech 2)

10-515-134 CARDIOPULMONARY DISEASES

...etiology, recognition, and management of cardiopulmonary diseases; x-ray interpretation; and the application of respiratory care in the management of medical and pre/post surgical patients. (Prerequisite: 10-806-189, Physiology-Cardio/Renal; Corequisite: 10-515-132, Respiratory Care Tech 2)

10-515-138 VENTILATION-MECHANICAL

...principles, operation, and application of devices for ventilatory assistance and support; study of the patient-ventilator interface; artificial airways; ventilatory failure; and physiological alterations from mechanical ventilation. (Corequisites: 10-515-146, Respiratory Care Clinical 2; 10-515-133, Pulmonary Function)

10-515-139 RESPIRATORY CARE CLINICAL 1

...respiratory care in a clinical environment, observation of administration of respiratory therapy modalities, and workshops to enhance skills taught in Respiratory Care-Introduction and Respiratory Care Technology 1. (Prerequisites: 10-515-125, Respiratory Care Tech 1; 10-515-151, Pharmacology)

10-515-143 CRITICAL CARE

...critically ill patient care including patient monitoring techniques and evaluation, acute and chronic respiratory failure, neuromuscular diseases, and trauma management. (Prerequisites: 10-515-139, Respiratory Care Clinical Practice 1; 10-806-189, Physiology-Cardio/Renal; 10-806-182, Anatomy/Physiology 1)

10-515-146 RESPIRATORY CARE CLINICAL 2

...minimum of 24-hours per week in clinical settings with emphasis on performance of respiratory procedures and application of equipment; limited patient care responsibilities. (Prerequisite: 10-515-139, Respiratory Care Clinical Practice 1)

10-515-147 RESPIRATORY CARE-NEONATAL/PEDIATRIC

...embryology fetal maturity, birth, assessment, neonatal abnormalities, congenital heart abnormalities, non-invasive and invasive care, croup, epiglottitis, bronchiolitis vs. asthma, Reye's Syndrome and Cystic Fibrosis. (Prerequisite: 10-515-138, Ventilation-Mechanical; Corequisite: 10-515-143, Critical Care)

10-515-151 PHARMACOLOGY ...drug dosages, central and peripheral nervous system, sympathomimetic bronchodilators, Xanthine bronchodilators, mucolytics, corticosteroids, antiasthmatic drugs, neuromuscular blocking agents, central nervous system depressants, respiratory stimulants, and cardiovascular agents. (Corequisite: 10-806-189, Physiology-Cardio/Renal; Prerequisite: 10-806-182, Anatomy/Physiology 1)

10-515-159 RESPIRATORY CARE CLINICAL 3

...administration of respiratory care to the critically ill, neonatal, and pediatric patient; ventilatory management; and evaluation skills. (Prerequisite: 10-515-146, Respiratory Care Clinical Practice 2)

Descriptions of courses not found on this page can be found in the back of the catalog.

Retail Management

Program Code 101047

ASSOCIATE DEGREE - TWO YEARS

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5435. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Retail Management program prepares students for entry-level management in the retail industry. Graduates are trained in merchandising techniques and management strategies pertaining to all facets of retailing.

Graduates of this program will be able to:

- Recommend a retail pricing plan.
- Evaluate alternative distribution strategies.
- Develop a retail product and service mix.
- Generate retail information for effective decision making.
- Apply continuous improvement strategies to solve retail problems.
- Assess emerging global trade events that impact retailing.
- Create a personal professional development plan.
- Manage resources and risks to contribute to profitability of the organization.
- Manage retailing within an enterprise.
- Apply technology to retail and retail information systems.
- Apply legal and ethical principles to personal, social, and professional behaviors.
- Develop long-term strategic retail marketing plans.
- Formulate retail selling strategies.
- Apply effective leadership skills.
- Design a retail promotion plan.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic math
- Ability to use computer keyboard

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as Manager Trainee, Department Manager, Assistant Store Manager, Assistant Buyer, Distributor/Planner Trainee, Market Research Assistant, Merchandiser, or Human Resource Specialist.

MANAGER TRAINEE: works within a rotation among the various departments and functions in a firm becoming familiar with all operations, and works with computer printouts.

DEPARTMENT MANAGER: supervises sales staff within the department, assigns duties, trains staff, evaluates employees' performance, supervises merchandise presentations, submits reports and analyzes inventory and stock control within a department, assists in sales when necessary, and initiates store communication.

ASSISTANT STORE MANAGER: supervises and schedules the sales staff, supervises merchandise presentations, opens and closes the store, submits reports, analyzes inventory and stock control within a department, assists in sales when necessary, and initiates store communication.

ASSISTANT BUYER: works with the merchandiser developing the line, assists in determining the merchandise to be included and the price points of merchandise, keeps clerical records for the buyer, follows up on merchandise shipments, initiates store communication, and works with computer printouts.

DISTRIBUTOR/PLANNER TRAINEE: determines the allocation of merchandise to various store units; works with computer printouts and unit control records; has contact with buyers, merchandise managers, and store personnel in a retail environment.

MARKET RESEARCH ASSISTANT: researches market conditions to determine potential sales, examines and assists in analyzing data to forecast future trends, prepares reports, and works with computer printouts.

MERCHANDISER: determines the merchandise selection in cooperation with a buyer or corporate management, responsible for the "presentation" of the merchandise in the department or store, tracks the "flow" of merchandise.

HUMAN RESOURCE SPECIALIST: analyzes retail functions and job descriptions; recruits, trains, assesses, and motivates employees.

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

- Buyer
- Entrepreneur
- Replenishment Manager
- Store Manager

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
10-102-158	Business-Intro	3
10-104-106	Retail Sales Mgmt	3
10-104-190	Retail Principles	3
10-801-195	Communication-Written	3
10-801-198	Speech	3
10-804-101	Math-Business	3
SEMESTER TOTAL		18

SECOND SEMESTER

10-103-103	Micro Basics MS Office 1	3
10-104-110	Marketing Principles	3
10-104-191	Customer Service Mgmt	3
10-104-192	Merchandise Management	3
10-196-110	Supervision Principles	3
SEMESTER TOTAL		15

THIRD SEMESTER

10-104-193	Retail Operations Mgmt	3
10-196-189	Team Building/Prob Solve	3
10-809-195	Economics	3
10-809-199	Psychology-Human Rel	3
	Elective	3
SEMESTER TOTAL		15

FOURTH SEMESTER

10-104-135	Retail Mgmt-Survival	3
10-104-164	Retail Mgmt Internship OR	3
10-104-180	Retail Mgmt Field Study	3
10-182-157	Logistics Management	3
10-196-193	Human Resource Mgmt	3
10-809-197	Society-Amer Contemp	3
	Elective	3
SEMESTER TOTAL		18

SUGGESTED ELECTIVES: Product Information (10-104-123), Retail Trends (10-104-162), Merchandising-Visual (10-104-194), and Marketing-Apparel (10-104-197).

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-104-106 RETAIL SALES MANAGEMENT

...leadership of retail industry employees in various selling and customer service activities; sales training, tracking, and analysis specifically for retail entities.

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

10-104-135 RETAIL MANAGEMENT-SURVIVAL

SKILLS ...review of current federal and state employment laws and employers' responsibilities; sources, consequences, and methods of handling stress; techniques and strategies of time management; sexual harassment; cultural/etiquette issues.

10-104-164 RETAIL MANAGEMENT INTERNSHIP

...professional work environment, interviewing techniques, sales, product knowledge, business operations, management awareness, inventory records/recordkeeping techniques with supervision/evaluation facilitated by instructor and contract training person.

10-104-180 RETAIL MANAGEMENT FIELD

STUDY ...examine a product or business career of major interest to the student through a research project that is student selected and instructor approved.

10-104-190 RETAIL PRINCIPLES ...macro issues facing retailers, including structural dynamics; strategic planning, environmental factors; consumer behavior; site selection; selecting markets in which to compete; and retailing issues, opportunities, and outlook.

10-104-191 CUSTOMER SERVICE

MANAGEMENT ...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.

10-104-193 RETAIL OPERATIONS MANAGEMENT

...management of a retail store operation including retail planning and control; retail information systems; and human resource management including placement, orientation, evaluation, recruiting, interviewing, discipline, performance problems, and training.

10-182-157 LOGISTICS MANAGEMENT ...basic concepts, management levels, elements of inventory control, transportation, warehousing, packaging, material handling and purchasing, and the role order processing plays in the distribution cycle.

10-196-110 SUPERVISION PRINCIPLES

...supervisor's role, planning, problem solving, organizing/staffing/training/retraining employees, motivation, evaluating performance, challenging employees, teamwork, controlling work, discipline, productivity, quality, and diversity.

10-196-189 TEAM BUILDING/PROBLEM

SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, different approaches to problem solving, consensus, data acquisition, analysis, developing alternative solutions, implementation and evaluation.

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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Speech Language Pathologist Assistant

ASSOCIATE DEGREE - SIX SEMESTERS

Program Code 105321

Offered at the Green Bay campus. Admissions, registration or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

The Speech-Language Pathologist Assistant program prepares students to work under the supervision of a certified and licensed Speech-Language Pathologist who evaluates, diagnoses, and treats individuals with communication and swallowing disorders.

Graduates of the Speech-Language Pathologist Assistant program, under the supervision of a certified licensed Speech-Language Pathologist, will be able to:

- Perform duties at entry-level safely, and within scope of practice.
- Follow instructions of supervising Speech-Language Pathologist and use feedback constructively.
- Use effective oral and written communication.
- Demonstrate effective interpersonal skills.
- Employ time management skills.
- Demonstrate global awareness of communication and communication related disorders.
- Conduct screenings without interpretation.
- Assist the Speech-Language Pathologist during assessment of patients, such as those that are difficult to test.
- Prepare materials for treatment and set up for treatment session.
- Provide direct treatment as directed by Speech-Language Pathologist.
- Select age-appropriate and culturally motivating materials for treatment.
- Maintain equipment and materials.
- Document patient progress toward established objectives stated in treatment plan/IEP.
- Perform administrative procedures to support the Speech Language Pathologist.
- Support the Speech Language Pathologist in research projects, in-service training and public relations programs.
- Adhere to ethical and legal standards.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

EMPLOYMENT POTENTIAL

A graduate of this program will have the potential for employment as a Speech-Language Pathologist Assistant. This is an emerging occupation and the job outlook is not fully predictable. The U.S. Department of Labor Occupational Outlook Handbook predicts that the growth in Speech-Language Pathology will be much faster than average (30% or more) through the year 2008.

SPEECH-LANGUAGE PATHOLOGIST

ASSISTANT: Performs speech-language screens, carries out treatment plans, observes and reports patients' responses, assists with assessment, schedules activities, prepares charts, performs maintenance of equipment, all under the supervision of a certified-licensed Speech-Language Pathologist.

With additional education and/or work experience, a graduate may find employment as:

- Speech-Language Pathologist

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- 1 year HS Biology or equivalent within the last 5 years
- A minimum standard ACT score of 20 or achieve established program Benchmarks on Accuplacer
- Medical examination within 3 months prior to program entry
- Caregiver background check
- Students are required to take AHA CPR Provider course prior to sixth semester for fieldwork participation.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

CURRICULUM

The Speech-Language Pathologist Assistant Associate Degree is a six semester program. Upon graduation a student will have completed 69 credits.

FIRST SEMESTER

Course No.	Description	Credits
10-801-196	Oral/Interpers Communication	3
10-809-198	Psychology-Intro	3
SEMESTER TOTAL		6

SECOND SEMESTER

* 10-532-111	SLPA-Intro	3
* 10-532-113	SLPA-Phonetics	3
10-801-195	Communication-Written	3
* 10-806-180	Anatomy/Physiology	4
10-809-190	Human Growth/Development	3
SEMESTER TOTAL		16

THIRD SEMESTER

10-103-103	Micro Basics MS Office 1	3
* 10-532-123	SLPA-Speech/Lang Develop	3
* 10-532-124	SLPA-Aural Rehabilitation	3
10-809-196	Sociology-Intro	3
	Elective	3
SEMESTER TOTAL		15

FOURTH SEMESTER

* 10-532-132	SLPA-Swallowing Disorders	2
* 10-532-133	SLPA-Assistive Technology	2
SEMESTER TOTAL		4

FIFTH SEMESTER

* 10-532-134	SLPA-Speech Disorders/Treat	4
* 10-532-135	SLPA-Lang Disorders/Treat	4
* 10-532-136	SLPA-Clinical Procedures	4
10-809-199	Psychology-Human Rel	3
SEMESTER TOTAL		15

SIXTH SEMESTER

10-160-111	Health Care Overview	2
* 10-532-142	SLPA Seminar	1
* 10-532-143	SLPA Fieldwork 1	3
* 10-532-144	SLPA Fieldwork 2	3
* 10-532-145	SLPA-Ethical Decision-Make	1
	Elective	3
SEMESTER TOTAL		13

NOTE: No final grade lower than C is acceptable in any of the courses marked with an asterisk. A student must repeat that particular course to achieve a C or better final grade in order to continue in or graduate from this program.

The Speech-Language Pathologist Assistant program will pursue accreditation with the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language Hearing Association in June, 2002.

Graduates of the program are eligible to register with the American Speech-Language-Hearing Association (ASHA) as a Speech-Language Pathologist Assistant beginning January, 2003.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-532-111 SLPA-INTRODUCTION ...the profession of Speech-Language Pathology, professional resources, communication, communication disorders, educational system, healthcare system and current trends.

10-532-113 SLPA-PHONETICS ...phonetics, acoustical phonetics, speech production, speech perception, speech categories, transcriptional phonetics, experimental phonetics, and clinical phonetics. (Pre/Corequisite: 10-532-111, SLPA Intro)

10-532-123 SLPA-SPEECH/LANGUAGE DEVELOPMENT ...neurolinguistics; language vs. thought; birth-to-two, preschool, school age speech development; language diversity; disorders; and aging. (Prerequisite: 10-532-111, SLPA-Intro)

10-532-124 SLPA-AURAL REHABILITATION ...aural rehabilitation, amplification systems, habilitation of children, educational management, management adults, and management geriatrics. (Prerequisite: 10-532-111, SLPA-Intro)

10-532-132 SLPA-SWALLOWING DISORDERS ...normal swallow, abnormal swallow, diagnostic procedures, neurologic dysphagia, mechanical dysphagia, team approach, nutrition, feeding issues, direct treatment, indirect treatment, and pediatric dysphagia. (Prerequisite: 10-806-180, Anatomy/Physiology)

10-532-133 SLPA-ASSISTIVE TECHNOLOGY ...augmentative/alternative communication assessment, unaided communication, aided communication, intervention strategies, funding, resources, and case studies. (Prerequisite: 10-532-123, SLPA-Speech/Language Development)

10-532-134 SLPA-SPEECH DISORDERS/ TREATMENT ...articulation, phonology, developmental apraxia, voice disorders of children, fluency disorders of children, acquired apraxia, dysarthria, voice disorders of adults, fluency disorders of adults, special populations, treatment materials, case studies. (Prerequisites: 10-532-123, SLPA-Speech/Language Development; 10-532-124, SLPA-Aural Rehabilitation)

10-532-135 SLPA-LANGUAGE DISORDERS/ TREATMENT ...language disorders, language disorders of children, language disorders of adolescents, screening and assessment, intervention, IEP development, aphasia, right hemisphere disorders, traumatic brain injury, dementia, multicultural issues, and case studies. (Prerequisites: 10-532-123, SLPA-Speech/Language Development; 10-532-124, SLPA-Aural Rehabilitation)

10-532-136 SLPA-CLINICAL PROCEDURES ...intervention methods, school-based treatment, medical treatment, administrative procedures, cultural diversity, universal precautions, screening, treatment, documentation, communicative competence, case studies, and fieldwork experience. (Prerequisites: 10-532-123, SLPA-Speech/Language Development; 10-532-124, SLPA-Aural Rehabilitation)

10-532-142 SLPA-UPDATE ...clinical situations, interviewing skills, job-seeking skills, and competency check-off. (Prerequisite: 10-532-136, SLPA-Clinical Procedures; Corequisite: 10-532-143, SLPA Fieldwork 1)

10-532-143 SLPA FIELDWORK 1 ...ethical standards, interpersonal communication, universal precautions, speech-language screening, treatment plans, behavior management, documentation, assist SLP, clerical procedures, scheduling, maintenance of materials, team collaboration, clinical clock hours, communication with SLP. (Prerequisite: 10-532-136, SLPA-Clinical Procedures; Corequisite: 10-532-142, SPLA Seminar)

10-532-144 SLPA FIELDWORK 2 ...ethical standards, interpersonal communication, universal precautions, speech-language screening, treatment plans, behavior management, documentation, assist SLP, clerical procedures, scheduling, maintenance of materials, team collaboration, clinical clock hours, communication with SLP. (Prerequisite: 10-532-143, SLPA Fieldwork 1)

10-532-145 SLPA-ETHICAL DECISION-MAKING ...ethics defined, elements of ethics, ethical problems, decision-making, responsibilities, professional relationships. (Corequisites: 10-532-143, SLPA Fieldwork 1; 10-532-144, SLPA Fieldwork 2)

Descriptions of courses not found on this page can be found in the back of the catalog.

Supervisory Management

Program Code 101961

ASSOCIATE DEGREE - ACCELERATED AND FLEXIBLE LEARNING OPTIONS

Offered at the Green Bay, Marinette, and Sturgeon Bay campuses. Information in Green Bay: (920) 498-5733. Information in Marinette: (715) 735-9361. Information in Sturgeon Bay: (920) 743-2207. Toll free: (800) 422-NWTC.

The 11 occupational specific courses, those beginning with a course number 196-xxx, are delivered in an Accelerated Learning format, specifically intended for working adults. These courses have a compressed schedule of six weeks each. Students may complete three courses, totaling nine credits in the same time that one traditional three-credit course is completed.

PROGRAM DESCRIPTION

Supervisory Management provides educational experiences to individuals preparing for, or already engaged in, leadership positions; and opportunities to explore specific applications in a given occupation.

The program is offered on a flexible, part-time schedule with most hours arranged to accommodate working adults. A student may complete portions of the program through credit by examination, credit for work experience, TV home study courses, and transfer of credit from other accredited institutions. Courses may also be taken on a full-time schedule. The occupation specific courses have classroom contact hours reduced but they deliver equivalent knowledge and skills.

Graduates of this program will be able to:

- Practice ethical leadership.
- Perform in team environments.
- Value diversity.
- Demonstrate workplace communication skills.
- Demonstrate analytical/creative thinking.
- Understand the financial components of an organization.
- Exhibit leadership skills.
- Envision change.
- Adapt organizations for change.
- Apply continuous improvement processes.
- Affect workplace safety.
- Apply current legal workplace standards.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- Basic reading and writing skills
- Math and reading assessments
- Completion of all recommended activities to address math and reading skill deficiencies

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

This program is designed to attract persons who are already engaged in, or are preparing for, supervisory or leadership roles in an organization. An employee who is already in a supervisory, leadership, or other management level position will be able to expand his/her level of effective leadership skills.

An employee not currently in a first level management role, who has established a good working relationship with his/her present employer, will enhance leadership skills and increase the chance of promotion into a leadership role as an opportunity presents itself within the company.

A graduate of the program who has little or no previous leadership experience, or a short employment record, will learn effective leadership skills useful on the job and in the community. 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 intra-departmental and inter-departmental communication and work flow.

In addition to traditional supervisory skills and practices, today's leaders must understand system(s), variation, and the Quality Improvement Process; be resources rather than bosses; effectively manage work place diversity; display leadership skills; use critical thinking skills; and use communication skills appropriate to the new team environment.

Students may take 12-15 credits per semester and complete the degree in 2 to 2 1/2 years.

CURRICULUM

The Supervisory Management Associate Degree consists of 11 occupational specific courses. Each course is six weeks in length. Upon graduation, a student will have completed 66 credits.

Course No.	Description	Credits
10-196-134	Legal Issues-Supervisors	3
10-196-136	Safety-Workplace	3
10-196-164	Supervisors-Personal Skills	3
10-196-168	Organizational Development	3
10-196-169	Diversity/Change Management	3
10-196-188	Project Management	3
10-196-189	Team Building/Prob Solve	3
10-196-190	Leadership Development	3
10-196-191	Supervision	3
10-196-192	Managing-Quality	3
10-196-193	Human Resource Mgmt	3
TOTAL CREDITS		33

Individuals may select the following accelerated or traditional occupational support and general education courses in any sequence while attending accelerated occupational specific courses.

These course requirements can also be met through credit for work experience, TV home study courses, and transfer of credit from other accredited institutions.

Course No.	Description	Credits
10-101-184	Business Finance/Budgeting	3
10-102-182	Business Operations	3
10-103-103	Micro Basics MS Office 1	3
10-801-195	Communication-Written	3
OR		
10-801-175	English Composition 1	3
10-801-196	Oral/Interpers Communication	3
OR		
10-801-198	Speech	3
10-804-149	Math Processes	3
10-809-195	Economics	3
10-809-197	Society-Amer Contemp	3
OR		
10-809-196	Sociology-Intro	3
10-809-199	Psychology-Human Rel	3
OR		
10-809-198	Psychology-Intro	3
Elective		3
Elective		3
TOTAL CREDITS		33

SUGGESTED ELECTIVE: Ethics (10-196-199)

ONLINE e-LEARNIG OPTIONS: Visit NWTC's Website at www.nwtc.tcc.wi.us to view options for Supervisory Management courses and related Certificates delivered via the Web.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-196-134 LEGAL ISSUES-SUPERVISORS

...legal practices in both union and nonunion environments, impact of US employment laws, global economy, appeal process, legal charges, hiring and firing process, harassment issues, and privacy issues.

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, stress, and related challenges to a supervisor, personal planning, valuing rights and responsibilities of others, effective communication, and assertiveness.

10-196-168 ORGANIZATIONAL DEVELOPMENT

...organization behavior and change; globalization, dealing with culture, change and future challenges affecting the total organization, decision making, vision, goals, performance management and planning, the role of organization structure.

10-196-169 DIVERSITY/CHANGE MANAGEMENT

...diversity in the workplace, analyze the effect of perceptions, attitudes, biases, and organization culture on diversity, dealing with barriers, change management strategy, process, and reactions, measuring progress and celebrating success.

10-196-188 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.

10-196-189 TEAM BUILDING/PROBLEM

SOLVING ...benefits and challenges of group work, necessary roles in a team, stages of team development, 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, mission and goals, ethical behavior, leadership style and adaptation, impacts of power, employee development, coaching, managing change, and conflict resolution.

10-196-191 SUPERVISION ...application of strategies

and transition to a contemporary supervisory role including day-to-day operations, analysis, delegation, controlling, staffing, leadership, problem solving, team skills, motivation, and training.

10-196-192 MANAGING-QUALITY ..personal

philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, managing a quality improvement project, and measuring effectiveness of continuous improvement activities.

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.

Descriptions of courses not found on this page can be found in the back of the catalog.

Surgical Technologist

Program Code 315121

TECHNICAL DIPLOMA - 3 SEMESTER PROGRAM: ENTER IN SUMMER OR FALL

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5543. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

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 the next operative procedures.

Graduates of the Surgical Technologist program will be able to:

- Be successfully employed in the field.
- Function as a member of the surgical team.
- Apply and maintain the principles of sterile technique and safety in the operating room.
- Prepare, handle, and care for surgical instruments, supplies, equipment, and medication.
- Use medical terminology.
- Identify basic anatomy and physiology.
- Maintain CPR certification.
- Operate a personal computer.
- Communicate effectively.
- Recognize the legal and policy limits of individual responsibility.
- Pass the Certification Test.

REQUIREMENTS FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent
- Satisfactory placement in the NWTC mathematics and reading tests or satisfactory placement on the ACT assessment test
- An interview or orientation
- A satisfactory medical examination within three months before entering the program
- All students are required to complete an American Heart Association Health Care Provider CPR course prior to program entry. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as a Surgical Technologist, Central Supply Technician, Claims Approver, or Private Scrub Technician.

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 and supplies for the next operative procedure.

CENTRAL SUPPLY TECHNICIAN: performs general cleaning of soiled equipment and instruments, assembles procedure trays and instrument pans, maintains inventories, loads the sterilizer, records patient charges, and does general record keeping.

CLAIMS APPROVER: processes insurance claims on a computer terminal.

PRIVATE SCRUB TECHNOLOGIST: is hired by the physician and assists as a surgical technologist in a hospital or in a private practice.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed criminal background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the criminal background check, a student may be denied access to clinical agencies/field sites and thus would not be able to complete the program. For the most current information on the Caregiver Law, visit this Web site: www.dhfs.state.wi.us

Students will be required to purchase their own scrub suits, provide their own transportation to clinical facilities, and pay for liability insurance for each clinical course.

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

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Englewood, CO 80112
(303) 694-9262
FAX (303) 689-0518

CURRICULUM

The Surgical Technologist Technical Diploma is a three-semester program. Upon graduation, a student will have completed 34 credits.

FIRST SEMESTER

Course No.	Description	Credits
* 10-510-165	Medical Terminology	3
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
* 31-806-312	Anatomy/Struct-Funct	2
SEMESTER TOTAL		7

SECOND SEMESTER

30-106-345	Information Process-Basic	1
* 31-512-311	Surgical Tech Proc/Lab	8
* 31-512-315	Surgical Tech Clinical 1	5
* 31-512-316	Surgical Tech Skills	1
SEMESTER TOTAL		15

THIRD SEMESTER

* 31-512-324	Surgical Tech Proc-Adv	3
* 31-512-325	Surgical Tech Clinical 2	6
* 31-512-335	Surgical Tech Clinical 3	3
SEMESTER TOTAL		12

NOTE: A student must be accepted into Surgical Technologist program before enrolling in 31-512-311, Surgical Tech Proc/Lab.

A minimum of a C grade is required for all courses marked with an asterisk.

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

10-510-165 MEDICAL TERMINOLOGY ...spelling, pronunciation, definition, and abbreviation application; word roots, prefixes and suffixes, and anatomical structure.

31-512-311 SURGICAL TECHNOLOGIST PROCEDURES/LABORATORY ...hospital environment, surgical team, asepsis, ethical and legal responsibilities, microbiology, infection control, sterilization, anesthesia, positioning patients, draping, specimen care, scrub and circulating duties. (Prerequisite: 31-806-312, Anatomy/Structure-Function)

31-512-315 SURGICAL TECHNOLOGIST CLINICAL 1 ...introduction to the operating room environment, identification and proper handling of surgical instrumentation, demonstration of scrubbing and circulating duties, body substance isolation, and utilization of the sterilization process. (Prerequisite: 31-512-311, Surgical Tech Proc/Lab)

31-512-316 SURGICAL TECHNOLOGIST SKILLS ...draping skills, Mayo stand and/or back table set-ups, routine surgical medications, specialized equipment and supplies utilized during surgery. (Prerequisite: 31-512-311, Surgical Tech Procedures/Lab)

31-512-324 SURGICAL TECHNOLOGIST PROCEDURES-ADVANCED ...in-depth coverage of surgical procedures incorporating anatomy, terminology, instruments, medications, specialized equipment, and supplies utilized, as well as patient perioperative care. (Prerequisite: 31-512-315, Surgical Tech Clinical Process 1)

31-512-325 SURGICAL TECHNOLOGIST CLINICAL 2 ...supervised application of intermediate level skills of a surgical technologist on minor procedures and beginning level skills on major procedures. (Prerequisite: 31-512-315, Surgical Tech Clinical Process 1)

31-512-335 SURGICAL TECHNOLOGIST CLINICAL 3 ...supervised application of advanced skills of an entry-level surgical technologist demonstrated on minor and major surgical procedures; the second scrub role will also be assumed. (Prerequisite: 31-512-325, Surgical Tech Clinical Process 2)

Descriptions of courses not found on this page can be found in the back of the catalog.

Weld Inspection

Program Code 304423

TECHNICAL DIPLOMA - ONE SEMESTER

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Weld Inspection prepares students to inspect and to use destructive and nondestructive methods to examine welds to code.

Graduates of the Weld Inspection Program will be able to:

- Examine metallurgical specimens.
- Examine weldments using nondestructive test methods.
- Examine weldments using destructive test methods.
- Evaluate weld test results.
- Interpret weld and nondestructive test symbols.
- Document test results for procedure and welder qualifications.
- Communicate inspection details.
- Interpret code requirements.
- Examine weldments for acceptability.
- Troubleshoot welding problems.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- A one-year welding program or documentation of equivalent work experience.

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the Weld Inspection program will have the potential for employment as a Manufacturer/Contractor Weld Inspector, Purchaser/Owners Weld Inspector, Nondestructive Technician, or Quality Control Representative.

MANUFACTURER/CONTRACTOR WELD

INSPECTOR: is a responsible representative of a company producing the product. The inspector is involved in the determination of weld quality in accordance with existing codes or specifications, and often acts as a troubleshooter.

PURCHASER/OWNERS WELD INSPECTOR:

is a responsible representative of a company purchasing a fabricated product who determines if the level of quality meets the requirements of the contract.

NONDESTRUCTIVE TECHNICIAN: specializes in the field of nondestructive evaluation of weldments using dye penetrant, magnetic particles, ultrasonics, or radiography.

QUALITY CONTROL REPRESENTATIVE:

is responsible for the monitoring of quality level using visual inspection, welding codes, and nondestructive testing. This person acts as a combination of an overseer and specialist.

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

- Certified Weld Inspector
- State Registered Welder
- Certified Welder

CURRICULUM

The Weld Inspection Technical Diploma is a one-semester program. Upon graduation, a student will have completed 14 credits.

FIRST SEMESTER

Course No.	Description	Credits
30-422-337	Weld Mat Analysis	2
30-442-341	Weld Inspection Fund/Code	3
30-442-342	Weld Inspection-Prac	3
30-470-334	Nondestructive Test A	3
30-470-335	Nondestructive Test B	3
SEMESTER TOTAL		14

This program is partially eligible for financial aid.

COURSE DESCRIPTIONS

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

30-422-337 WELD MATERIAL ANALYSIS ...the metallurgical properties of welds as related to the welding processes, application of testing these properties as related to the welding codes, and the interpretation of the test analysis.

30-442-341 WELD INSPECTION-CODE

...documents governing inspection, joint geometry, terminology, welding and NDT symbols; mechanical/chemical properties of metals; welding, brazing, and cutting process; weld/base metal discontinuities; destructive and nondestructive testing; and welding codes.

30-442-342 WELD INSPECTION-PRACTICAL

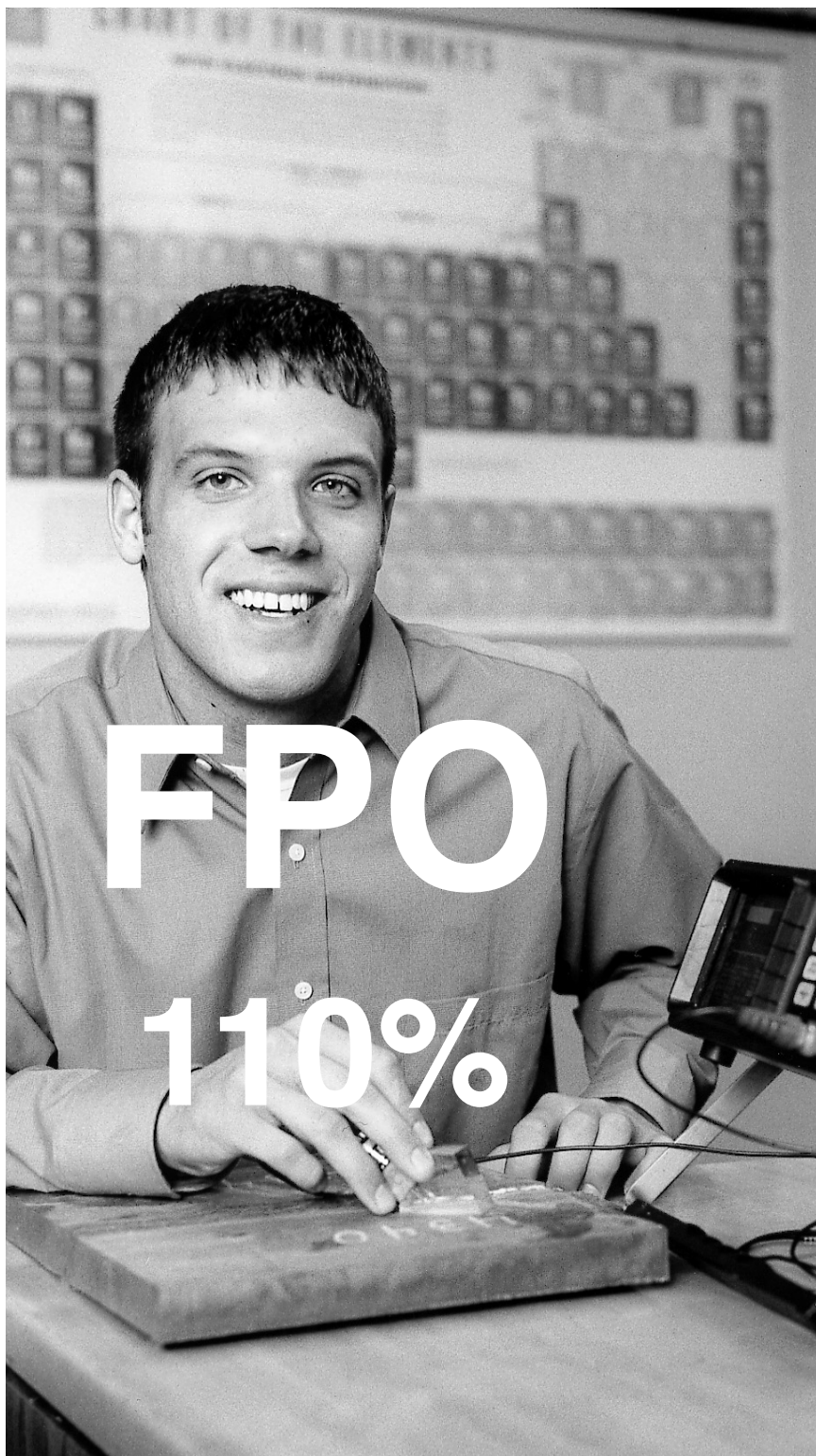
...visual inspection techniques, procedure/welder qualification, destructive and nondestructive examination of welds, weld process inspection, and the use of inspection tools.

30-470-334 NONDESTRUCTIVE TEST A

...identification and classification of discontinuities; nondestructive examination of welds using dye penetrant, ultrasonic, and magnetic particle test methods; and interpretation of test results according to code.

30-470-335 NONDESTRUCTIVE TEST B

...nondestructive examination of welds using magnetic particle and radiographic test methods, radiation measurement and safety, and interpretation of radiographs according to AWS Code D1.1.



Descriptions of courses not found on this page can be found in the back of the catalog.

Welding

Program Code 314421

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Marinette and Green Bay campuses. Information in Marinette: (715) 735-9361. Information in Green Bay: (920) 498-5733.

Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Welding prepares students to join metal by applying heat and pressure to melt the edges of metal sections together to form a permanent bond. Welders plan layouts or work from blueprints, drawings, or other specifications.

Graduates of the Welding Program will be able to:

- Be successfully employed in the welding industry.
- Perform procedures using plasma, carbon arc, oxyacetylene processes.
- Perform procedures using the shielded metal arc process (S.M.A.W.).
- Perform procedures using the Gas Metal Arc process (G.M.A.W.).
- Perform procedures using the Gas Tungsten Arc process (G.T.A.W.).
- Perform procedures using the Flux Core Arc welding process. (F.C.A.W.).
- Perform procedures using the Submerged Arc 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.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent.
(Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as 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 A.W.S. (American Welding Society) and A.S.M.E. (American Society of Mechanical Engineers) with testing provided on campus. Other positions might include Construction Trades Welder, Ironworker Trades Welder, Millwright, Sheetmetal Trades Welder, and Pipe Trades Welder. People in many apprenticeship programs are required to take welding classes as part of their training.

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

- Journeylevel Welder
- Welding Inspector
- Welding Supervisor
- Journeylevel Welder/Fabricator

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
31-442-301	Welding-Cutting/Visual	1
31-442-313	Blueprint Reading	2
31-442-314	Welding-Layout	3
31-442-316	Welding-Shielded Metal Arc	5
31-442-317	Welding-Gas Metal Arc	5
31-804-301	Math 1-Trades	2
SEMESTER TOTAL		18

SECOND SEMESTER

31-422-310	Metallurgy	2
31-442-321	Welding-Gas Tungsten Arc	5
31-442-324	Metal Fabrication	4
31-442-327	Welding-Flux Core	5
31-801-386	Communicating Effectively	1
SEMESTER TOTAL		17

This program is fully eligible for financial aid.

COURSE DESCRIPTIONS

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

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.

31-442-313 BLUEPRINT READING ...orthographic projection, sketching, dimensioning, section and auxillary views, structural shape identification, weld symbols, welding symbol nomenclature welded joint geometry, metric conversion and interpretation of fabrication from prints.

31-442-314 WELDING-LAYOUT ...use measuring instruments, geometric nomenclature; elemental, circular and polygon construction; parallel line, radial line, triangulation and development of drawings to scale. (Corequisite: 31-442-313, Blueprint Reading)

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

31-442-324 METAL FABRICATION ...metal fabrication, hazards, production, measuring tools, metal shear, forming roll, pressbrakes, box and pan brake, sawing equipment, drill press, sheet metal tools, the hydraulic ironworker, and layout of shapes. (Corequisites: 31-442-313, Blueprint Reading; 31-442-314, Welding-Layout)

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

Descriptions of courses not found on this page can be found in the back of the catalog.

Wood Technics

Program Code 314102

TECHNICAL DIPLOMA - ONE YEAR

Offered at the Green Bay campus. Admissions, registration, or counselor: (920) 498-5733. Course information: (920) 498-5461. Toll free: (800) 422-NWTC.

PROGRAM DESCRIPTION

Wood Technics prepares students to enter the building construction trades as carpenters and cabinetmakers.

Graduates of the Wood Technics Program will be able to:

- 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.

REQUIREMENT FOR PROGRAM ENTRY

NWTC requires an entrance skill inventory for all program students. Please see the Accuplacer section of this catalog for more information.

- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)

MATH LEVEL

Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

EMPLOYMENT POTENTIAL

A graduate of the program will have the potential for employment as: Carpenter/Cabinetmaker, Carpenter/Finish, Carpenter/General Builder, Carpenter/Mill Worker and Carpenter/Rough.

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.

- Contractor
- Carpenter Journeyperson
- Mill Supervisor
- Journeylevel Cabinet Maker

CURRICULUM

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

FIRST SEMESTER

Course No.	Description	Credits
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
31-804-301	Math 1-Trades	2
31-806-354	Science-Wood Tech	2
SEMESTER TOTAL		18

SECOND SEMESTER

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
31-801-385	Communicating-Writing	1
31-801-386	Communicating Effectively	1
31-804-302	Math 2-Trades	1
SEMESTER TOTAL		16

This program is fully eligible for financial aid.

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.

31-405-310 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.

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. (Prerequisite: 31-409-321, Wood Techniques-Cabinetry 1)

31-410-301 WOOD TECHNIQUES-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.

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. (Prerequisite: 31-410-311, Wood Techniques-Carpentry 1)



Descriptions of general Occupational Support courses can be found after the program descriptions at the back of the catalog.