**Accounting**

**Associate Degree - Two Years, Accelerated options offered at night**

Offered at the Green Bay campus and part-time at the Marinette campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (800) 422-NWTC, ext. 5444.

**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.

**Program Outcomes**

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

**Requirements for Program Entry**

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- Basic math (algebra recommended).
- Ability to use computer keyboard.

**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 disposal 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 68 credits.

**First Semester**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-101-104</td>
<td>Accounting Applications/Proc</td>
<td>3</td>
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<tr>
<td>10-101-110</td>
<td>Accounting 1</td>
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<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
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<td>Micro: Excel-Intro</td>
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<tr>
<td>10-103-132</td>
<td>Micro: Excel-Part 2</td>
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<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
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<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
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**Second Semester**

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<th>Description</th>
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<tr>
<td>10-101-105</td>
<td>Accounting-Computer Ledger</td>
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</tr>
<tr>
<td>10-101-120</td>
<td>Accounting 2</td>
<td>4</td>
</tr>
<tr>
<td>10-101-151</td>
<td>Accounting-Payroll</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
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<td><strong>Semester Total</strong></td>
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**Third Semester**

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<th>Catalog No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>10-101-131</td>
<td>Accounting-Intermediate</td>
<td>4</td>
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<tr>
<td>10-101-134</td>
<td>Accounting-Cost</td>
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</tr>
<tr>
<td>10-101-154</td>
<td>Accounting-Personal Tax</td>
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</tr>
<tr>
<td>10-104-109</td>
<td>Credit Policies/Procedures</td>
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**Fourth Semester**

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<th>Description</th>
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<tr>
<td>10-101-142</td>
<td>Accounting-Managerial</td>
<td>3</td>
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<tr>
<td>10-101-143</td>
<td>Accounting-Govern/Nonprofit</td>
<td>2</td>
</tr>
<tr>
<td>10-101-156</td>
<td>Accounting-Auto Appl</td>
<td>3</td>
</tr>
<tr>
<td>10-101-189</td>
<td>Accounting-Applying Quickbooks OR</td>
<td>3</td>
</tr>
<tr>
<td>10-101-152</td>
<td>Accounting-Business Tax</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td>10-101-153</td>
<td>Accounting-Computerized Tax</td>
<td>1</td>
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<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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</tr>
</tbody>
</table>

**Suggested Electives:**

Depending on your choice of required classes above: either Accounting: Applying Quickbooks (10-101-189) or Accounting-Business Tax (10-101-152) and Accounting-Computerized Tax (10-101-153) can be used as an elective.

Financial Management-Medical, 10-101-145
Accounting-QuickBooks, 10-101-190
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.

10-101-104 ACCOUNTING APPLICATIONS AND PROCEDURES ...use of financial calculators, checkbook records, purchasing, shipping/receiving, A/R, and A/P systems, markups, discounts, credit charges, business loans, depreciation methods, inventory methods, and break-even, sales gain/loss, and financial statement analysis.

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.

10-101-110 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. (Prerequisite: 10-101-120, Accounting 2)

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

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

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

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

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

10-101-156 ACCOUNTING-AUTOMATED APPLICATIONS ...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, 10-101-105 Accounting-Computer Ledger)

10-101-189 ACCOUNTING-APPLYING QUICKBOOKS ...learners will be introduced to basic and advanced features of Quickbooks and will apply skills in realistic business simulations including creating accounts, invoicing, budgeting, preparing statements, journaling and graphing.

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel’s database features and analysis tools. Requires prior completion of Excel Intro.

10-104-109 CREDIT POLICIES AND PROCEDURES ...credit/collection policies, procedures, and law, credit investigations, evaluate credit worthiness, support credit decisions, create credit forms, fraud, bankruptcy, techniques to control and manage accounts receivable.

Visit our website at: www.nwtc.edu
Administrative Assistant

Associate Degree - Two Years

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Administrative Assistant prepares students to be efficient and effective office employees through application of business procedures (proofreading, telephone, records management, meeting and travel arrangements, communication, project management, Internet research, etc.) and software skills (Windows, word processing, desktop publishing, spreadsheet, presentation graphics, web creation, electronic calendaring, and database).

All software materials prepare students for the Microsoft Office Specialist (MOS) exams.

With additional education and/or work experience, students will be prepared for the Certified Administrative Professional (CAP) exam.

Program Outcomes
• Keyboard efficiently using correct techniques.
• Communicate business messages effectively.
• Produce effective business documents.
• Apply organizational skills to prioritize and manage workflow.
• Use appropriate technology to perform office tasks and manage information.
• Plan events, travel, conferences, and meetings.
• Present researched information.
• Integrate appropriate software to produce business documents.
• Demonstrate professionalism in the business environment.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Basic math.
• A keyboarding skill of 20 WPM using the TOUCH method is recommended.

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

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, or Transcriptionist.

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, desktop publishing, web creation, 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 transcription and word processing equipment, proofreads, and verifies documents.

With additional education and/or work experience, a graduate may find employment in a variety of specialties.
• Executive Assistant
• Office Manager
• Records Analyst
• 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
Catalog No. Description Credits
10-103-111 Micro: Windows-Intro 1
10-103-121 Micro: Word-Intro 1
10-103-122 Micro: Word-Part 2 1
10-103-151 Micro: PowerPoint-Intro 1
10-106-103 Info Process Principles 3
10-106-107 Keyboard-Speed Building 1 1
10-106-112 Keyboard-Speed Building 2 1
10-106-131 Proofreading/Editing Essen 1 3
10-106-153 Professional Profile 3
10-804-123 Math with Business Apps 3
Semester Total 18

Second Semester
10-103-131 Micro: Excel-Intro 1
10-103-132 Micro: Excel-Part 2 1
10-103-160 Micro: Outlook 1
10-106-126 Admin Business Procedures 1 2
10-106-132 Proofreading/Editing Essen 2 2
10-106-142 Software Projects 3
10-106-152 Records Management 2
10-106-172 Telephone/Messaging Skills 1
10-801-195 Written Communication 3
Semester Total 16

Third Semester
10-103-141 Micro: Access-Intro 1
10-103-142 Micro: Access-Part 2 1
10-103-162 Micro: FrontPage 1
10-103-165 Micro: Publication Software 1
10-106-136 Admin Business Procedures 2 3
10-196-102 Workplace Interactions 2
10-809-197 Contemporary Amer Society 3
10-809-199 Psychology Of Human Relations 3
Elective 3
Semester Total 18

Fourth Semester
10-101-103 Accounting Principles-Applied 2
10-106-137 Integrated Software Apps 2
10-106-144 Administrative Asst Intern 3
10-801-197 Technical Reporting 3
10-809-172 Race Ethnic & Diversity 3
10-809-195 Economics 3
Semester Total 16
Total Credits 68

Suggested Electives:
Voice Recognition, 10-106-129
Office Politics, 10-106-157
Meetings-Organizing, 10-106-171

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.

10-101-103 ACCOUNTING PRINCIPLES-APPLIED
...the accounting fundamentals, recording of business transactions, preparation of financial statements, cash basis and accrual business accounting for service enterprises, and merchandising businesses with a manual and computer software system.

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; creating headers/footers; creating and formatting tables, creating charts; outlines, and web pages; and applying styles. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2
...advanced word processing features including merge, sort and select; text flow; footnotes/endnotes; images, shapes, WordArt; macros; shared documents; master and subdocuments; specialized tables and indexes; forms; and sharing data. Requires strong introductory Word skills.

10-103-131 MICRO: EXCEL-INTRODUCTION
...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2
...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel’s database features and analysis tools. Requires prior completion of Excel Intro.

10-103-141 MICRO: ACCESS-INTRODUCTION
...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-142 MICRO: ACCESS-PART 2
...lookup Wizards, queries, custom forms, multi-page forms, custom reports with grouping and calculations, integrating, embedding charts, data access pages, pivot tables, pivot charts, labels, and hyperlinks. Requires strong introductory Access skills.

10-103-151 MICRO: POWERPOINT-INTRODUCTION
...prepare handouts and slide shows using templates, animations, transitions, sounds, and hyperlinks. Requires Windows experience.

10-103-160 MICRO: OUTLOOK
...use email, distribution lists, signatures, attachments, and task lists; schedule appointments and meetings using the calendar; flag, filter, sort, and merge contacts, use message delivery options; archive messages and folders.

10-103-162 MICRO: FRONTPAGE
...create a FrontPage Web; customize and manage web pages and images; create and use interactive forms using frames; publish Office web pages to a web server.

10-103-165 MICRO: PUBLICATION SOFTWARE
...create and edit newsletters, brochures, flyers, forms, business cards, emails, e-commerce websites, and other business publications using publication layout software.

10-106-103 INFORMATION PROCESSING PRINCIPLES
...information processing cycle and workflow, terminology, hardware, software, ergonomics, security, systems, Internet, and career opportunities.

10-106-107 KEYBOARD-SPEED BUILDING 1
...skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic speed developed is 40 wpm in a 3-minute timing. Requires touch keyboarding at 30 wpm.

10-106-112 KEYBOARD-SPEED BUILDING 2
...skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic speed developed is 45 wpm in a 5-minute timing. Requires touch keyboarding at 40 wpm.

10-106-126 ADMINISTRATIVE BUSINESS PROCEDURES 1
...today’s global business environment, including time management using PIM software, flexible work arrangements, processing mail, meeting coordination, copiers and fax machines, and application of common business communication using appropriate formats. Requires Windows, intermediate Word, PowerPoint, and Outlook experience. (Prerequisite: 10-106-131, Proofreading/Editing Essentials 1).

10-106-131 PROOFREADING/EDITING ESSENTIALS 1
...will develop skills for identifying and correcting grammar, spelling, punctuation, capitalization, numbers, and abbreviations for creating error-free business documents. Introduction and use of reference manuals/resources, portfolio guidelines, and transcription equipment. (Touch keyboarding and basic word processing skills are assumed.)

10-106-132 PROOFREADING/EDITING ESSENTIALS 2
...apply advanced proofreading and editing skills in electronic and printed business documents using Proofomatic techniques, reference manuals, and resources. Multitasking and decision-making skills are enhanced through transcription and proofreading. (A passing grade in Proofreading/Editing Essentials 1 is a strong recommendation for success.)

10-106-136 ADMINISTRATIVE BUSINESS PROCEDURES 2
...today’s global business environment including Internet-based research, event planning, integrating the use of personal digital assistants, virtual meeting technologies, financial responsibilities, travel coordination, job search, career advancement, and voice recognition software.

10-106-137 INTEGRATED SOFTWARE APPLICATIONS
...manipulate and manage data to prepare integrated documents using Word, Excel, Access, PowerPoint, and Publisher, create electronic portfolio using FrontPage, and use practice certification software tests to demonstrate competencies. Requires completion of all Microsoft Office software classes.

10-106-142 SOFTWARE PROJECTS
...applying Windows XP and Word 2003 features to manage and format business documents while exercising decision-making skills and enhancing keyboarding in a team setting. Requires Windows and intermediate Word background.

10-106-144 ADMINISTRATIVE ASSISTANT INTERNSHIP
...employment with supervision of business employer and instructor; 144 work hours and 17 class hours with related projects, discussions, and program portfolio. Recommended for graduating semester.

10-106-152 RECORDS MANAGEMENT
...major systems of classification: alphabetic, numeric, geographic, subject, chronologic, and micro systems; retention and disposition of records; records equipment and technology.

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

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

10-196-102 WORKPLACE INTERACTIONS
...apply effective basic interaction principles when the students SEEK out information, TALK a clear message, FLEX to workplace changes, cope with emotionally-charged situations and help your team.

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.
Applied Engineering Technology

Associate Degree

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

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.

Program Outcomes
• 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 Academic Skills Assessment section of this catalog for more information.
• High school diploma or equivalent. (Equivalency may be established through GED testing or other tests.)
• High school algebra or equivalent. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential
A graduate in the Applied Engineering Technology program works with manufacturing and industry improving productivity, quality and safety. This program allows the student to receive a background in all three areas, and to select one or more as a specialization.

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 significant choices 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.

A graduate specializing in Quality Assurance Technician will have potential for employment as a Quality Technician and will have the background to pursue certification with the American Society for Quality (ASQ). As a Quality Technician, the graduate will have skills and knowledge to promote continuous improvement of industrial processes and customer satisfaction through the latest scientific approaches.

Curriculum
The Applied Engineering Technology program consists of 18 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 68 credits.

All Students Must Complete

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<td>Micro: Word-Intro</td>
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<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
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</tr>
<tr>
<td>10-103-151</td>
<td>Micro: PowerPoint-Intro</td>
<td>1</td>
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<tr>
<td>10-623-100</td>
<td>Standards/Regs</td>
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<tr>
<td>10-623-101</td>
<td>Quality Assurance-TECHSPAN</td>
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<tr>
<td>10-623-102</td>
<td>SPC-TECHSPAN</td>
<td>2</td>
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<tr>
<td>10-623-103</td>
<td>Quality Systems-TECHSPAN</td>
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<td>10-623-105</td>
<td>Precision Measure</td>
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<tr>
<td>10-623-106</td>
<td>Interpret Eng Draw</td>
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<tr>
<td>10-623-107</td>
<td>Manufacturing Prac</td>
<td>2</td>
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<tr>
<td>10-623-108</td>
<td>Manufacturing Materials</td>
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<tr>
<td>10-623-109</td>
<td>Manufacturing Problem Solving</td>
<td>2</td>
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<tr>
<td>10-623-111</td>
<td>Manufacturing Processes</td>
<td>2</td>
</tr>
<tr>
<td>10-623-114</td>
<td>Material Resource Planning</td>
<td>2</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-804-110</td>
<td>Elem Algebra w Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-804-118</td>
<td>Intern Algebra w Apps</td>
<td>4</td>
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<tr>
<td>10-806-154</td>
<td>General Physics 1</td>
<td>4</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
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<table>
<thead>
<tr>
<th>Elective</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>

| Total Credits | 53 |

Industrial/Manufacturing Engineering Technician

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-623-121</td>
<td>Work Measurement</td>
<td>3</td>
</tr>
<tr>
<td>10-623-161</td>
<td>Facilities Planning</td>
<td>3</td>
</tr>
<tr>
<td>10-623-162</td>
<td>Process Improvement</td>
<td>2</td>
</tr>
<tr>
<td>10-623-163</td>
<td>Equipment Plan/Just</td>
<td>2</td>
</tr>
<tr>
<td>10-623-164</td>
<td>Ergonomics/Safety</td>
<td>2</td>
</tr>
<tr>
<td>10-623-165</td>
<td>Process Planning</td>
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|             | Total Credits | 15 |

Quality Assurance Technician

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-606-159</td>
<td>Materials Science</td>
<td>3</td>
</tr>
<tr>
<td>10-623-113</td>
<td>Quality Documentation</td>
<td>3</td>
</tr>
<tr>
<td>10-623-115</td>
<td>Cust/Vendor Rel/Audits</td>
<td>3</td>
</tr>
<tr>
<td>10-623-116</td>
<td>Inspection</td>
<td>3</td>
</tr>
<tr>
<td>10-623-133</td>
<td>Quality Engineering</td>
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</tbody>
</table>

|             | Total Credits | 15 |

Safety Technician

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-449-100</td>
<td>Safety Management</td>
<td>3</td>
</tr>
<tr>
<td>10-449-101</td>
<td>Regulatory Compliance</td>
<td>3</td>
</tr>
<tr>
<td>10-449-102</td>
<td>Accident Investigation</td>
<td>3</td>
</tr>
<tr>
<td>10-449-103</td>
<td>Industrial Hygiene-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-449-104</td>
<td>Audits/Inspections</td>
<td>3</td>
</tr>
</tbody>
</table>

|             | Total Credits | 15 |

| Total Credits for Program | 68 |

Suggested Electives:
- Emergency Spill Response, 10-449-105
- Construction Safety, 10-449-106 (3 credits)
- Construction Safety, 10-449-107 (1 credit)
- General Industry Safety, 10-449-108

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.

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...prepare handouts and slide shows using templates, animations, transitions, sounds, and hyperlinks. Requires Windows experience.

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.

10-449-101 REGULATORY COMPLIANCE ...self-paced course providing an overview of occupational safety/health compliance procedures emphasizing areas such as hazard communication, lockout/tagout, confined space entry, personal protective equipment, machine guarding, hand/portsable tools, fire safety.

10-449-102 ACCIDENT 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.

* 10-449-103 INDUSTRIAL HYGIENE-INTRODUCTION ...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. (Prerequisite: 10-804-130, Math-Algebra/Trigonometry)

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 accidents in the workplace. They will see how to locate and interpret past injury and illness data and compare to current data.

10-606-159 MATERIALS SCIENCE ...engineering materials, material selection, the relationship between material structure and properties, and failure analysis for design improvement. Materials covered include; metallic, polymeric, electric, ceramic, and composite/exotic.

10-623-100 STANDARDS/REGULATIONS ...role of standards and regulations to reduce work place hazards.

10-623-101 QUALITY ASSURANCE-TECHSPAN ...role of quality improvement in modern companies.

10-623-102 SPC-TECHSPAN ...basic concepts and tasks of collecting data, calculating values, and constructing control charts.

10-623-103 QUALITY SYSTEMS-TECHSPAN ...implementation of ISO 9000 standards to a manufacturing company.

10-623-105 PRECISION MEASURE ...you will be introduced to measurement tools and their uses. The course provides hands-on activities using tools, reading prints and assessing measuring systems.

10-623-106 INTERPRET ENGINEERING DRAWINGS ...reading and interpreting industrial prints.

10-623-107 MANUFACTURING PRACTICES ...practices used by manufacturers to make their operations more competitive, efficient and cost effective.

10-623-108 MANUFACTURING MATERIALS ...classifications, properties and applications of the materials used in manufacturing.

10-623-109 MANUFACTURING PROBLEM SOLVING ...scientific method of identifying the root cause, common analysis and change generation techniques for a variety of manufacturing problems.

10-623-111 MANUFACTURING PROCESSES ...primary and secondary processes; tools and tooling. Used in manufacturing, forming and casting techniques and material removal processes; assembly, finishing and routing techniques.

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

10-623-114 MATERIAL RESOURCE PLANNING ...how manufacturers determine their need for resources, how the availability of resources affects capacity, and how resources are allocated.

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

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

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.

10-623-133 QUALITY ENGINEERING ...planning for quality, quality of design, reliability, manufacture planning, and design of experiments. (Prerequisite: 10-804-130, Math-Algebra/Trigonometry)

10-623-161 FACILITIES PLANNING ...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.

10-623-162 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.

10-623-163 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.

10-623-164 ERGONOMICS/WORKPLACE SAFETY ...student will be able to identify, analyze, and recommend improvements to work areas minimizing work place injuries. Exposure to: ergonomic guidelines, cost analysis, benefits of ergonomic improvements and accident investigation.

10-623-165 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.

* 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.
Apprenticeship

Offered at the Green Bay, Marinette, and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

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 are 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.

Apprenticeship is not an on-demand program. All applicants must apply to the programs through the respective committee or sponsor. The Apprenticeship Office at NWTC can assist with the application process. Contact the Apprenticeship office at: (920) 498-5682, or check out our website at: www.nwtc.edu [Apprenticeship].

What are the Qualifications for an Applicant?

The basic requirement is that the applicant be at least 16 years of age. In all cases, however, the applicant is also required to be a high school graduate or to have passed the high school equivalency test. Applicants are also required to take the Academic Skills Assessment test which is provided at Northeast Wisconsin Technical College or other trade-specific exam by committee.

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 NWTC are:

- Carpenter
- Computed Tomography
- Early Childhood Education
- Electrician
- Construction Electrician
- Residential Electrician
- Voice Data Video Technician
- Electrical/Instrumentation
- Industrial Electrician
- Foundry/Pattern Maker
- Instrumentation
- Machinist
- Regular Machinist
- Maintenance Machinist
- Tool & Die
- Mason
- Bricklayer
- Block Layer
- Cement Finisher
- Plasterer
- Tile Setter
- Machine Repair
- Mechanical Adjuster
- Maintenance Mechanic (Millwright)
- Industrial Maintenance Mechanic
- Industrial Pipefitter
- Plumber
- Sheet Metal
- Steamfitter
- ABC HVAC
Please Note

• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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
Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444. Visit the Architectural Technology website at: www.nwtc.edu/programs/architecture

Program Description
Architectural Technology prepares students to work in residential design, for architects, engineers, or material manufacturers, to produce construction documents for wood, steel, masonry, and reinforced concrete structures.

Program Outcomes
• Develop architectural working drawings for commercial buildings using steel, concrete, and masonry.
• Develop residential working drawings to meet code and client criteria.
• Perform technical designs/calculations and produce drawings for electrical, plumbing, and heating/ventilating systems.
• Produce drawings and details for structural wood, steel, and concrete members and connections.
• Explain the design and construction process.
• Solve problems creatively and critically.
• Communicate architectural facts and ideas orally and in writing.
• Communicate architectural ideas graphically utilizing sketching techniques.
• Work as a team to produce group 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 utilize 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 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 Academic Skills Assessment 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.
• Provide proficiency of Word, Excel, PowerPoint, Windows and the Internet.

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 for residential, commercial and industrial buildings.

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

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

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

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

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

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

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

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

First Semester
Catalog No.  Description  Credits
10-614-110  CAD Architectural - Intro  2
10-614-115  Architectural Drafting Prin  4
10-614-121  Materials-Building Const  3
10-804-118  Interm Algebra w Apps  4
10-809-198  Intro to Psychology  3
10-614-151  Semester Total  16

Second Semester
Catalog No.  Description  Credits
10-614-120  CAD-Architectural  1
10-614-128  Residential Design/Drafting  5
10-614-131  Structural Draft-Wood/Steel  3
10-801-195  Written Communication  3
10-804-196  Trigonometry w Apps  3
10-614-121  Elective  2
10-614-153  Semester Total  17

Third Semester
Catalog No.  Description  Credits
10-614-135  Commercial Draft-Steel  4
10-614-141  Structural Draft-Concrete  3
10-614-151  Estimating-Building  3
10-614-153  Architectural Building Science  2
10-801-197  Technical Reporting  3
10-804-195  College Algebra w Apps  3
10-614-153  Semester Total  18

Fourth Semester
Catalog No.  Description  Credits
10-614-118  Commercial Drafting Practices  5
10-614-146  Systems-Mechanical  3
10-614-160  Structural Analysis  3
10-809-172  Race Ethnic & Diversity  3
10-614-148  College Algebra w Apps  3
10-614-130  Elective  3
10-614-153  Semester Total  17
10-614-153  Total Credits  68

Suggested Electives:
Land Surveying and Site Development, 10-607-106
Architectural Design, 10-614-117
Architectural Construction Experiences, 10-614-148
Architectural Desktop-Intro, 10-614-130

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.

10-614-110 CAD ARCHITECTURAL - INTRODUCTION
...establishes basis for all students taking architectural program courses requiring AutoCAD proficiency. Commands and drafting techniques related to creating accurate architectural working drawings including standard symbols, proper dimensions, and notes. (Prerequisite: Accepted into Architectural)

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)

10-614-118 COMMERCIAL DRAFTING PRACTICES
...this capstone course includes: highlights from program courses, preparing architectural working drawings for reinforced and pre-cast concrete framed buildings, the professional practice of architecture and the construction process. (Prerequisite: 10-614-135, Commercial Drafting-Steel)

10-614-120 CAD-ARCHITECTURAL
...advances knowledge of AutoCAD commands and drafting techniques in order to complete a set of residential working drawings by combining drawings using external references, incorporating lineweights, and creating cabinet isometrics. (Prerequisites: 10-614-115, Architectural Drafting Principles; 10-614-110, CAD Architectural-Intro; 10-804-118, Interm Algebra w Apps)

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)

10-614-128 RESIDENTIAL DESIGN/DRAFTING
...residential design principles are incorporated in team projects and presentations while sketching, architectural drafting techniques using traditional and CAD methods are used to develop residential working drawings. (Prerequisites: 10-614-115 Architectural Drafting Principles; AND 10-614-121, Materials-Building Construction; 10-614-110, CAD Architectural-Intro; 10-804-118, Interm Algebra W/App)

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; 10-614-110, CAD Architectural-Intro)

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; 10-614-128, 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; 10-614-128, Residential Design/Draft)

10-614-146 SYSTEMS-MECHANICAL
...plumbing, HVAC/R, electrical systems, calculations, mechanical drafting, space requirements, codes, mechanical specification, and construction within the building. (Prerequisites: 10-614-128, Residential Design/Drafting; 10-614-120, CAD-Architectural; 10-614-153, Architectural Building Science)

10-614-151 ESTIMATING-BUILDING
...residential materials take off and square foot material and labor costs along with construction techniques. (Prerequisites: 10-614-121, Materials-Building Construction; 10-614-131 Structural Draft-Wood Steel; 10-804-118, Interm Algebra w Apps)

10-614-153 ARCHITECTURAL BUILDING SCIENCE
...fundamental concepts of applied science, as related to architectural design and building construction, are presented with lecture, demonstration and hands-on experiences at a technical level. (Prerequisites: 10-614-121, Materials-Building Construction; 10-804-196, Trigonometry w Apps)

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: 10-614-128, Residential Design/Drafting; 10-614-153, Architectural Building Science; 10-804-196, Trigonometry w Appl)

Visit our website at: www.nwtc.edu
Program Description
Auto Collision Repair and Refinishing Technician prepares students to repair and refinish damaged bodies and parts of automobiles and light trucks.

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

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Accreditations
- NATEF (National Automotive Technicians Education Foundation) Certified Program
- I-CAR Automotive Steel GMA (MIG) Welding Qualification test site
- STAR - Spray Technique Analysis and Research training site
- Auto Glass Technical Institute (AGTI) affiliated provider

Associations
- National Institute for Automotive Service Excellence
- I-CAR Industry Training Alliance Member
- Wisconsin Auto Collision Technicians Association
- Bay Auto Body Association
- National Auto Body Congress
- Collision Repair Instructors Network
- I-CAR Education Foundation

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, Uni-body Repair Specialist, and Trim and Glass Installer.

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

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

Frame and Alignment Technician: 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 vehicles.

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

Curriculum
The Auto Repair and Refinishing Technician Technical Diploma is a two-year, four-semester program. Upon graduation, a student will have completed 57 credits. The two NWTC Auto Collision, Repair and Refinishing programs are organized in “series” of courses. The two series are: Repair and Refinishing. Both series of courses must be completed in which ever program (associate degree or technical diploma) the student elects to pursue. A student can start in either program (associate degree or technical diploma) at the beginning of either series of classes or when prerequisites are fulfilled.

Auto Collision Refinishing–First Series
10-405-101 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
31-801-385 Communicating-Writing 1
10-804-106 Intro to College Math 3
32-405-320 Auto Collision Ind Shadow 1
Semester Total 15

Auto Collision Refinishing–Second Series
10-103-111 Micro: Windows-Intro 1
10-103-121 Micro: Word-Intro 1
10-405-120 Auto Collision Finish Def 2
10-405-124 Auto Refinishing-Advanced 3
10-405-128 Auto Color Adjustment/Tint 3
10-405-132 Auto Collision Damage Rprts 2
32-806-353 Science-Mechanics 2
Semester Total 14

Auto Collision Repair–First Series
10-405-107 Auto Collision Trim/Hdware 1
10-405-111 Auto Glass/Hardware 2
10-405-115 Auto Collision Non-Struct 3
10-405-144 Auto Collision Welding 2
10-602-110 Auto Collision Mechanical Serv 3
31-801-386 Communicating Effectively 1
Semester Total 12

Auto Collision Repair–Second Series
10-405-122 Auto Collision Damage Anal 2
10-405-126 Auto Collision Structural 3
10-405-130 Auto Collision Sectioning 3
10-405-146 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
10-809-197 Contemporary American Soc 3
Semester Total 16
Total Credits 57

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; creating headers/footers; creating and formatting tables, creating charts; outlines, and web pages; and applying styles. Requires Windows experience.

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

10-405-132 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.

10-405-144 AUTO COLLISION WELDING ...welding processes, machines and accessories, gas metal arc welding (wire), oxyacetylene cutting, welding and brazing, and gas tungsten arc welding.

10-405-146 AUTO COLLISION WELDING-ADVANCED ...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 AUTO COLLISION MECHANICAL SERVICE ...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. (Corequisite: 10-602-118, DC Electricity Tech)

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. (Corequisite: 10-602-160, Auto Prep Tech)

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

32-405-320 AUTO COLLISION INDUSTRY SHADOWING ...an opportunity to experience the auto collision industry working environment. Course will facilitate student’s opportunities to meet technicians and shop owners, and to observe all facets of the industry.
Auto Collision Repair and Refinish Technology  Program Code 104051

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444. Visit the Auto Collision Repair and Refinish website at: www.nwtc.edu/Programs/AutoColl

Program Description
This two-year program provides all of 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.

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 Refinishing Technology 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.

Program Outcomes
• Insurance Adjuster and Appraiser.
• Auto Collision Repair and Refinishing Center Supervisor.
• Auto Collision Repair and Refinishing Center Department Manager.
• Equipment and Supplies Specialist.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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.
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Accreditations
• NATEF (National Automotive Technicians Education Foundation) Certified Program
• I-CAR Automotive Steel GMA (MIG) Welding Qualification test site
• STAR - Spray Technique Analysis and Research training site
• Auto Glass Technical Institute (AGTI) affiliated provider
• I-CAR Education Foundation

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
• Insurance Adjuster or Appraiser

Curriculum
The Auto Collision Repair and Refinish Technology Associate Degree is a two-year program. Upon graduation, a student will have completed 65 credits. The two NWTC Auto Collision Repair and Refinishing programs are organized in "series" of courses. The two series are: Repair and Refinishing. Both series of courses must be completed in which ever program (associate degree or technical diploma) the student elects to pursue. A student can start in either program (associate degree or technical diploma) at the beginning of either series of classes or when prerequisites are fulfilled.

Auto Collision Refinishing–First Series
Catalog 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 Written Communication 3
10-804-106 Intro to College Math 3
Semester Total 16

Auto Collision Refinishing–Second Series
Catalog No. Description Credits
10-405-120 Auto Collision Finish Def 2
10-405-124 Auto Refinishing-Advanced 3
10-405-128 Auto Color Adjustment/Tint 3
10-405-132 Auto Collision Damage Rpts 2
10-801-196 Oral/Interpersonal Comm 3
10-809-197 Contemporary Amer Society 3
Semester Total 16

Auto Collision Repair–First Series
Catalog No. Description Credits
10-405-107 Auto Collision Trim/Hardware 1
10-405-111 Auto Glass/Hardware 2
10-405-115 Auto Collision Non-Struct 3
10-405-144 Auto Collision Welding 2
10-602-110 Auto Collision Mechanical Serv 3
10-801-197 Technical Reporting 3
10-809-199 Psychology Of Human Relations 3
Semester Total 17

Auto Collision Repair–Second Series
Catalog No. Description Credits
10-405-122 Auto Collision Damage Analy 2
10-405-126 Auto Collision Structural 3
10-405-130 Auto Collision Sectioning 3
10-405-146 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
10-809-172 Race Ethnic & Diversity 3
Semester Total 16
Total Credits 65

This program is fully eligible for financial aid.

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

Associations
• National Institute for Automotive Service Excellence
• I-CAR Industry Training Alliance Member
• Wisconsin Auto Collision Technicians Association
• Bay Auto Body Association
• National Auto Body Congress
• Collision Repair Instructors Network
• I-CAR Education Foundation

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Northeast Wisconsin Technical College 2006-2007 Catalog
Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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 ...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 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. (Corequisite: 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 sanding, masking, preparing adjacent panels for blending, and application of stone resistant materials. (Corequisite: 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. (Corequisite: 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. (Prerequisites: 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/Hrdware; 10-405-111, Auto Glass/Hrdware; 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 structural panel replacement guidelines and procedures, partial structural panel guidelines and procedures, sectioning joints required in replacement of: quarter panels, front rails, rear rails, rocker panels, A-pillars, B-pillars, floor panels, and full body sectioning. (Prerequisites: 10-405-103, Auto Collision Rep; 10-405-107, Collision Trim/Hrdware; 10-405-111, Auto Glass/Hrdware; 10-405-115, Collision Non-Structural; 10-405-122, Collision Damage Analysis; 10-442-144, Collision Welding; 10-602-110 Collision Mech Serv)

10-405-132 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.

10-405-144 AUTO COLLISION WELDING ...welding processes, machines and accessories, gas metal arc welding (wire), oxyacetylene cutting, welding and brazing, and gas tungsten arc welding.

10-405-146 AUTO COLLISION WELDING-ADVANCED ...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 AUTO COLLISION MECHANICAL SERVICE ...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. (Corequisite: 10-602-118, DC Electricity Tech)

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. (Corequisite: 10-602-160, Auto Prep Tech)

10-602-119 AUTO COLLISION ELECTRONICS ...electrical circuit diagnosis, troubleshooting and repair of commonly affected circuits that an Auto Collision Technician will encounter.
Automation Engineering Technology/Mecomtronics

Program Code 106641

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description

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

Program Outcomes

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

Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- To complete the program in a minimum of two years, students must have satisfied or completed Intermediate Algebra with Applications, 10-804-118, before entering the first semester of the program. This is equivalent to two years of High School Algebra and one year of High School Geometry. Intermediate Algebra with Applications, 10-804-118, is a prerequisite for the first semester courses: DC 2: Circuits, 10-660-105; and Trigonometry with Applications, 10-804-196.
- Other beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential

Employment opportunities are available in the fields of electronics, pharmaceuticals, food, health, telecommunications, manufacturing, computers, packaging and transportation.

- Controls Designer
- Automation Technician
- Control Technician
- Engineering Technician
- Control Engineer In Training
- Automation Engineer In Training

Suggested Electives:

Machine Tool Processes 1, 10-420-171
Machine Tool Processes 2, 10-420-172
Machine Fabrication 1, 10-442-150
Machine Fabrication 2, 10-442-151
Mechanics 2: Intermediate, 10-620-122
Mechanics 3: Systems, 10-620-123
Fluids 3: Intermediate Hy, 10-620-165
Fluids 4: Advanced Hydraul, 10-620-166
Rigging Systems 1, 10-620-105
Rigging Systems 2, 10-620-106

This program is fully eligible for financial aid.

Curriculum

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

First Semester

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<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tr>
<td>10-620-100</td>
<td>Fluids 1: Basic Pneumatics</td>
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<td>10-620-101</td>
<td>Fluids 2: Basic Hydraulics</td>
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<td>10-620-121</td>
<td>Mechanics 1: Basic</td>
<td>1</td>
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<td>10-660-101</td>
<td>Digital 1: PLC</td>
<td>1</td>
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<tr>
<td>10-660-102</td>
<td>Digital 2: Sequential</td>
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<td>10-660-103</td>
<td>Digital 3: Registers</td>
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<td>10-660-104</td>
<td>DC 1: Introduction</td>
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<td>10-660-105</td>
<td>DC 2: Circuits</td>
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<td>10-664-100</td>
<td>Automation 1: Control Logic</td>
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<td>10-664-101</td>
<td>Automation 2: Motor Control</td>
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<td>10-804-190</td>
<td>Trigonometry w Apps</td>
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<td>10-809-198</td>
<td>Intro to Psychology</td>
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Second Semester

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<td>Electromech Fundamentals</td>
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<td>10-660-107</td>
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<td>10-660-108</td>
<td>AC 2: Reactance</td>
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<td>AC 3: RLC Circuits</td>
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<td>10-660-110</td>
<td>Electronics 1: Diodes-Basic</td>
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<td>10-660-111</td>
<td>Electronics 2: Trans-Basic</td>
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<td>10-660-112</td>
<td>Electronics 3: Op-Amps-Basic</td>
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<td>Automation 5: PLC</td>
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<td>Automation 6: PLC</td>
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<td>10-804-195</td>
<td>College Algebra w Apps</td>
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<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
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Third Semester

<table>
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<tr>
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<td>Power Electronics 2: Drives</td>
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<td>10-620-150</td>
<td>Industrial Enclosures</td>
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<td>10-620-159</td>
<td>Power Electronics 3: Drives</td>
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<td>10-620-161</td>
<td>Power Electricity 1: Motors</td>
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</tr>
<tr>
<td>10-620-162</td>
<td>Power Electricity 2: Motors</td>
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<tr>
<td>10-664-109</td>
<td>Automation CAD 1</td>
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<td>10-664-150</td>
<td>Automation 7: PLC</td>
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<td>Automation 8: HMI</td>
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<td>10-664-152</td>
<td>Automation 9: HMI</td>
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<td>10-664-160</td>
<td>Control 1: Transducers</td>
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<tr>
<td>10-664-161</td>
<td>Control 2: Fundamentals</td>
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<td>10-664-162</td>
<td>Control 3: Process Systems</td>
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<tr>
<td>10-801-195</td>
<td>Written Communication</td>
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Fourth Semester

<table>
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<tbody>
<tr>
<td>10-664-153</td>
<td>Automation 10: Network</td>
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<td>10-664-154</td>
<td>Automation 11: Network</td>
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<tr>
<td>10-664-155</td>
<td>Automation 12: Advanced</td>
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<tr>
<td>10-664-163</td>
<td>Control 4: Drive Performance</td>
<td>1</td>
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<tr>
<td>10-664-164</td>
<td>Control 5: Serve Systems</td>
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<tr>
<td>10-664-165</td>
<td>Control 6: Serve Systems</td>
<td>1</td>
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<td>10-664-189</td>
<td>Automation Systems Integration</td>
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<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
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<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
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<td><strong>Elective</strong></td>
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</tr>
</tbody>
</table>

Northeast Wisconsin Technical College 2006-2007 Catalog
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor. (920) 498-5444.

Descriptions of courses not found on this page can be found in the back of this catalog.
Automotive Technician
Technical Diploma - Two Years
Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361.
Toll-free: (800) 422-NWTC, ext. 5444. Visit the Auto Technology and Technician website at: www.nwtc.edu/Programs/AutoTech

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.

Program Outcomes
• 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 Academic Skills Assessment 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.
• Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

Accreditations
NATEF (National Automotive Technicians Education Foundation)

Note
• All NWTC Automotive programs are ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Automotive Programs are, at a minimum, Master, ASE Certified Technicians.
• The Automotive Technician Program is ASE certified in all eight automotive program areas. All staff are ASE certified.

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, chooses the correct 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, inspectsg engine components, reassembles to factory specifications.

Transmission and Drive Train Specialist: Diagnoses and locates problems, makes necessary repairs to automatic and manual 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 65 credits.

First Semester
Catalog No.  Description  Credits
10-602-114  Brake Technology  5
10-602-115  Engine Performance I Tech  5
10-602-117  Wiring/Schematics Tech  1
10-602-118  DC Electricity Technology  1
10-602-160  Auto Preparation Technology  1
31-442-350  Welding-Machine Trades  2
31-801-355  Communicating-Writing  1
Semester Total  16

Second Semester
10-602-124  Steering/Suspension Tech  5
10-602-126  Chassis Electricity Tech  2
10-602-128  Auto Engine Performance II  5
10-602-161  Auto Fuels Technology I  1
10-804-106  Intro to College Math  3
Semester Total  16

Third Semester
10-602-135  Heating/Cooling AC Tech  4
10-602-145  Engine Repair Technology  5
10-602-147  Electronics Mfg Specifics  3
10-602-162  Auto Fuels Tech II  1
31-419-311  Hydraulics-Applied  2
31-801-386  Communicating Effectively  1
Semester Total  16

Fourth Semester
10-602-129  Automotive Emission Systems  1
10-602-139  Auto Trans/Transaxle Tech  1
10-602-140  Auto Trans/Transaxle Tech  2
10-602-146  Manual Transmission/Differ  4
10-602-148  Automotive Computer Technology  2
10-602-159  Auto Body Service Technology  1
10-809-197  Contemporary Amer Society  3
Semester Total  17
Total Credits  65

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 hour off campus selected work experience. (Corequisite: 10-602-160, Auto Preparation Technology)


10-602-117 WIRING/SCHEMATURE TECHNOLOGY...electrical symbols, wiring diagrams, tracing wiring circuits, and diagnosing electrical problems with wiring diagrams, **design an automotive electrical circuit. (Corequisite: 10-602-118, DC Electricity Tech)

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 DC electrical applications. (Corequisite: 10-602-160, Auto Prep Tech)

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. (Corequisite: 10-602-160, Auto Preparation Technology)

10-602-126 CHASSIS ELECTRICITY TECHNOLOGY...batteries, starting and charging system components, lighting systems components, indicator system components, horn system components, motor driven system components, **research paper on automotive hybrids. (Prerequisites: 10-602-118, DC Electricity Tech; 10-602-117, Wiring/Schematic Tech; Corequisite: 10-602-160 Auto Preparation Technology)


10-602-139 AUTO TRANS/TRANSAXLE TECHNOLOGY 1...transmission/transaxle safety, transmission fluid, transmission maintenance, test procedures, external transmission adjustments, and 5 hour off-campus work experience. (Prerequisites: 10-602-160, Auto Preparation Technology; 10-602-118, DC Elec Tech; 10-602-117, Wiring Cartech; Corequisite: 10-602-140, Auto Trans/Transaxle Tech 2)


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. (Corequisite: 10-602-160, Auto Preparation Technology)

10-602-146 MANUAL TRANSMISSION/ DIFFERENTIAL TECHNOLOGY...drivetrain safety, universal joints, half-shafts, transmission repair/overhaul, clutch, shift linkage, four-wheel drive, differential, *10 hour off campus selected work experience. (Corequisite: 10-602-160, Auto Preparation Technology)


10-602-159 AUTOMOTIVE BODY SERVICE TECHNOLOGY...internal door components, body opening adjustments, exterior body components, seat removal/repair, and interior trim. (Prerequisite: 10-602-160, Auto Preparation Technology)

10-602-160 AUTO PREPARATION TECHNOLOGY...personal safety, auto equipment safety, repair order information, industry computer applications, repair tools, fasteners, chemicals, vehicle preventive maintenance, **research OSHA automotive shop safety requirements.


10-602-162 AUTOMOTIVE FUELS TECHNOLOGY II...automotive fuels, fuel system, components, fuel and fuel system testing, diesel engine operation.

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.
Automotive Technology

Associate Degree - Two Years

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444.
For information in Marinette: (715) 735-9361.
Toll-free: (800) 422-NWTC, ext. 5444. Visit the Auto Technology and Technician website at: www.nwtc.edu/Programs/AutoTech

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

Program Outcomes
• 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 Academic Skills Assessment section of this catalog for more information.
• Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

Accreditation
NATEF (National Automotive Technicians Education Foundation)

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

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, Shop Foreman, Parts Manager, Warranty Claims Person, or an Owner/Operator.

Automotive Service Technician: diagnoses and locates trouble, makes the necessary repairs, chooses the correct 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 manual 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.

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.

Curriculum
The Automotive Technology Associate Degree is a two-year, four-semester program offered on both the Green Bay and Marinette Campuses. Upon graduation, a student will have completed 68 credits.

First Semester

**Course** | **Credits**
--- | ---
**10-602-114** Brake Technology 5
**10-602-115** Engine Performance I Tech 5
**10-602-117** Wiring/Schematics Tech 1
**10-602-118** DC Electricity Technology 1
**10-602-160** Auto Preparation Technology 1
10-804-106 Intro to College Math 3
Semester Total 16

Second Semester

**Course** | **Credits**
--- | ---
**10-602-124** Steering/Suspension Tech 5
**10-602-126** Chassis Electricity Tech 2
**10-602-128** Auto Engine Performance II 5
10-801-195 Written Communication 3
10-809-197 Contemporary Amer Society 3
Semester Total 18

Third Semester

**Course** | **Credits**
--- | ---
**10-602-135** Heating/Cooling AC Tech 4
**10-602-146** Engine Repair Technology 5
10-801-196 Oral/Interpersonal Comm 3
10-801-197 Technical Reporting 3
10-809-172 Race Ethnic & Diversity 3
Semester Total 18

Fourth Semester

**Course** | **Credits**
--- | ---
**10-602-129** Automotive Emission Systems 1
**10-602-139** Auto Trans/Transaxle Tech 1 3
**10-602-140** Auto Trans/Transaxle Tech 2 3
**10-602-146** Manual Transmission/Differ 4
10-602-148 Automotive Computer Technology 2
10-809-199 Psychology Of Human Relations 3
Semester Total 16
Total Credits 68

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 instructor’s approval

* 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.

** 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 hour off campus selected work experience. (Corequisite: 10-602-160, Auto Preparation Technology)

10-602-115 ENGINE PERFORMANCE I TECHNOLOGY ...engine safety, preventive maintenance, four stroke theory, ignition systems, test equipment, scopes, *10 hour off campus selected work experience. (Corequisites: 10-602-160, Auto Preparation Technology; 10-602-118, DC Electricity)

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. (Corequisite: 10-602-118, DC Electricity Tech)

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. (Corequisite: 10-602-160, Auto Prep Tech)

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. (Corequisite: 10-602-160, Auto Preparation Technology)

10-602-126 CHASSIS ELECTRICITY TECHNOLOGY ...batteries, starting and charging system components, lighting systems components, indicator system components, horn system components, motor driven system components, **research paper on automotive hybrids. (Prerequisites: 10-602-118, DC Electricity Tech; 10-602-117, Wiring/Schematic Tech; Corequisite: 10-602-160, Auto Preparation Technology)


10-602-139 AUTO TRANS/TRANSAXLE TECHNOLOGY 1 ...transmission/transaxle safety, transmission fluid, transmission maintenance, test procedures, external transmission adjustments, and 5 hour off-campus work experience. (Prerequisites: 10-602-160, Auto Preparation Technology; 10-602-117, Wiring Schematics Tech; Corequisite: 10-602-140 Auto Trans/Transaxle Tech 2)

10-602-140 AUTO TRANS/TRANSAXLE TECHNOLOGY 2 ...test procedures, transmission removal and installation, overhaul, electronic controls, input sensors, output sensors, and scanner diagnostics, 5 hour off-campus work experience. (Prerequisites: 10-602-160, Auto Preparation Technology; 10-602-117, Wiring Schematics Tech; Corequisite: 10-602-139, Auto Transaxle Tech)

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. (Corequisite: 10-602-160, Auto Preparation Technology)

10-602-146 MANUAL TRANSMISSION/ DIFFERENTIAL TECHNOLOGY ...drivetrain safety, universal joints, half-shafts, transmission repair/overhaul, clutch, shift linkage, four-wheel drive, differential, *10 hour off campus selected work experience. (Corequisite: 10-602-160, Auto Preparation Technology)


10-602-160 AUTO PREPARATION TECHNOLOGY ...personal safety, auto equipment safety, repair order information, industry computer applications, repair tools, fasteners, chemicals, vehicle preventive maintenance, **research OSHA automotive shop safety requirements.

Visit our website at: www.nwtc.edu
Business Administration Credit
Program Code 101041

Associate Degree - Two Years, Accelerated

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444. Visit the Business Administration Credit web site at: network.nwtc.edu/credit

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.

Program Outcomes
- Adhere to internal credit policies and procedures.
- Process credit applications.
- Conduct credit investigations.
- Analyze business and consumer financial statements.
- Make credit decisions.
- Use credit related documents.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Resolve collection issues/problems.
- Resolve discrepancies in customer's accounts.
- Assess how economic policies and changes in the level of business activity affect the credit industry.
- Deliver effective customer service.
- Evaluate the performance of a credit department.
- Demonstrate state and federal laws.
- Manage the work of other people in a team environment.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Perform basic business math calculations.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- Basic math.
- Ability to use computer keyboard.

Employment Potential
A graduate of the program will have the potential for employment as a Credit Manager Trainee, Assistant Credit Manager, Credit Specialist, Collection Specialist, Personal Banker, and Loan Officer.

Credit Manager Trainee: learns all phases of operating a business or financial institution credit department, usually in preparation for a management position.

Assistant Credit Manager: assists a department or branch manager in all phases of operation, including the extension, collection, and control of credit.

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

Collection Specialist: contacts consumers or businesses to arrange payments and may become involved with legal aspects of collections.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Credit Manager
- Commercial Banker

Note
- The courses beginning with course numbers 102-xxx and 104-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.
- Learners interested in double majoring in Accounting or Financial Institutions Management should consult with an instructor.

Curriculum
The Business Administration Credit Associate Degree is an accelerated program. Upon graduation, a student will have completed 67 credits.

Technical Studies
<table>
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<tr>
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<th>Description</th>
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<td>10-104-111</td>
<td>Credit-Consumer</td>
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<tr>
<td>10-104-117</td>
<td>Credit-Business</td>
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<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
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<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
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<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-132</td>
<td>Micro: Excel-Part 2</td>
<td>1</td>
</tr>
<tr>
<td>10-101-110</td>
<td>Accounting 1</td>
<td>4</td>
</tr>
<tr>
<td>10-102-150</td>
<td>Law-Business</td>
<td>3</td>
</tr>
<tr>
<td>10-102-166</td>
<td>Collection Methods</td>
<td>3</td>
</tr>
<tr>
<td>10-104-121</td>
<td>Credit Management Practices</td>
<td>3</td>
</tr>
<tr>
<td>10-102-101</td>
<td>Credit/Business Applications</td>
<td>3</td>
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<td>10-102-161</td>
<td>Law-Credit</td>
<td>4</td>
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<tr>
<td>10-102-172</td>
<td>Financial Statement Analy</td>
<td>3</td>
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<tr>
<td>10-104-122</td>
<td>Credit-Customer Serv/Sales</td>
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<tr>
<td>10-104-146</td>
<td>Credit Internship</td>
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General Studies
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<td>10-801-195</td>
<td>Written Communication</td>
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<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
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<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
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<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations Flexible</td>
<td>3</td>
</tr>
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<td>Total General Studies Credits</td>
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</table>

Total Program Credits 67

Suggested Electives:
Any course in the Financial Institutions Management or Accounting 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.

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.

10-102-101 CREDIT AND BUSINESS APPLICATIONS ...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, break-even, depreciation, gain/loss, and inventory. (Prerequisite: 10-101-110, Accounting 1)

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.

10-102-158 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.

10-102-161 LAW-CREDIT ...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-102-167, Commercial Lending OR 10-104-117, Credit-Business)

10-102-166 COLLECTION METHODS ...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Prerequisite: 10-102-167, Commercial Lending OR 10-104-117, Credit-Business)

10-102-172 FINANCIAL STATEMENT ANALYSIS ...types of financial statements, analyze financial statements, research company data, perform industry research, examine SEC 10-K and annual report, and write financial analysis report. (Prerequisite: 10-101-110, Accounting 1)

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-104-111 CREDIT-CONSUMER ...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-104-117 CREDIT-BUSINESS ...credit in the business world and company, organizing credit department, policies, procedures, terms of sale, credit investigations, evaluate credit worthiness, support credit decisions, credit forms, international credit and business fraud. (Prerequisite: 10-104-111, Credit-Consumer)

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. (Prerequisite: 10-102-167, Commercial Lending, OR 10-104-117, Credit-Business)

10-104-122 CREDIT-CUSTOMER SERVICES & SALES ...customer service and sales issues faced by a business credit department, proper phone and face-to-face etiquette with credit customers, and deduction resolution. (Prerequisite: 10-102-166, Collection Methods)

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.
**Civil Engineering Technology**

**Associate Degree - Two Years, Plus One Summer**

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

**Program Description**

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

**Program Outcomes**

- 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 hot mix asphalt.
- Students will be capable of understanding the legal aspects of land surveying and use land surveying instruments to collect data necessary to produce topographic maps, establish horizontal and vertical control, and to lay out civil engineering projects.
- Students will understand and be able to describe different methods of building construction and elements of inspection and construction documentation.
- Students 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 Academic Skills Assessment 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.
- Attendance at orientation or a planned meeting with program staff is required.
- Students must have had two years of high school algebra, one year of high school geometry and an acceptable Academic Skills Assessment Algebra score or have completed or tested out of Intermediate Algebra w/ Apps, course 10-804-118, before taking the following First Semester program courses:
  - Soil Mechanics
  - Surveying/Mapping
  - Trigonometry w/Apps

**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, hot mix, asphalt, concrete, aggregate, and other construction materials; and identifies and classifies soil samples for foundation construction and environmental purposes.

**Survey Technician:** obtains data and makes computations pertaining to angles, distances, elevations, points, contours, and other purposes using levels, total station, data collectors, 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

**Curriculum**

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

**First Semester**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-606-112</td>
<td>Engineering Applications</td>
<td>1</td>
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<tr>
<td>10-606-113</td>
<td>CAD</td>
<td>2</td>
</tr>
<tr>
<td>10-607-119</td>
<td>Civil Drafting Technology</td>
<td>2</td>
</tr>
<tr>
<td>10-607-121</td>
<td>Surveying/Mapping</td>
<td>3</td>
</tr>
<tr>
<td>10-607-128</td>
<td>Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm.</td>
<td>3</td>
</tr>
<tr>
<td>10-804-196</td>
<td>Trigonometry w/Apps</td>
<td>3</td>
</tr>
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<td><strong>Semester Total</strong></td>
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**Second Semester**

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<th>Description</th>
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<tbody>
<tr>
<td>10-607-102</td>
<td>Land Surveying/Computer Appl</td>
<td>1</td>
</tr>
<tr>
<td>10-607-110</td>
<td>Cemented Aggregate Mixtures</td>
<td>4</td>
</tr>
<tr>
<td>10-607-125</td>
<td>Civil Public Works Construct</td>
<td>2</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-804-195</td>
<td>College Algebra w Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-806-154</td>
<td>General Physics 1</td>
<td>4</td>
</tr>
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<td><strong>Semester Total</strong></td>
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**Summer Semester**

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<tr>
<th>Catalog No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>10-607-191</td>
<td>Civil Engineering Internship</td>
<td>1</td>
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**Third Semester**

<table>
<thead>
<tr>
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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-607-131</td>
<td>Surveying</td>
<td>4</td>
</tr>
<tr>
<td>10-607-134</td>
<td>Surveying/Drafting</td>
<td>3</td>
</tr>
<tr>
<td>10-607-135</td>
<td>Statics/Strength Matl-Civil</td>
<td>4</td>
</tr>
<tr>
<td>10-804-198</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
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<td><strong>Semester Total</strong></td>
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**Fourth Semester**

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<th>Description</th>
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<tbody>
<tr>
<td>10-607-147</td>
<td>Water Technology</td>
<td>3</td>
</tr>
<tr>
<td>10-607-151</td>
<td>Highway Surveying</td>
<td>2</td>
</tr>
<tr>
<td>10-607-152</td>
<td>Construction Meth/Bldg Syst</td>
<td>2</td>
</tr>
<tr>
<td>10-607-153</td>
<td>Global Positioning Systems</td>
<td>2</td>
</tr>
<tr>
<td>10-607-154</td>
<td>Land Law</td>
<td>3</td>
</tr>
<tr>
<td>10-809-198</td>
<td>Intro to Psychology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
<td><strong>15</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>

**Suggested Electives:**

Land Law II, 10-607-155

This program is fully eligible for financial aid.

**Accreditation**

The Civil Engineering Technology program at NWTC is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700.
Course Descriptions
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

10-606-112 ENGINEERING APPLICATIONS ...basics of a computer system, computer terminology, Windows XP, 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. (Corequisite: 10-607-119, Civil Drafting Technology; OR 10-606-119 Technical Sketching OR 10-614-113, 2D Essentials)

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

10-607-110 CEMENTED AGGREGATE MIXTURES ...inspection/testing concepts, sampling procedures, aggregate properties, PCC mix design methods, HMA design, field laboratory quality control testing. ACI Grade I and WisDOT PCCTEC certifications are available through this course. (Prerequisites: 10-804-118 Intermediate Algebra w Apps; and Instructor approval)

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. (Prerequisite: Acceptance into the Civil Engineering Technology program)

10-607-121 SURVEYING/MAPPING ...basic surveying principles, history of land, surveying, instruments in the field, making computations, and generating computerized maps. (Prerequisites: 10-804-118, Intern Algebra w Apps; Corequisites: 10-804-196, Trigonometry w Apps; Accepted into Civil Program)

10-607-125 CIVIL PUBLIC WORKS CONSTRUCT ...horizontal curves, sewer/water systems, civil engineering mapping, field inspector roles, and CAD applications. (Prerequisites: 10-606-113, Computer Aided Drafting; 10-607-121, Surveying and Mapping; and Instructor approval needed)

10-607-128 SOIL MECHANICS ...origins of soil, properties/characteristics of soil, soil classification systems, subsurface exploration, foundations, moisture-density relationships, soil compaction, and groundwater. Certification in the use and transfer of portable nuclear density gauges is available through this course. (Prerequisites: 10-804-118, Intermediate Algebra w Apps; Accepted into Civil Program)

10-607-131 SURVEYING 2 ...closed traverse measurements, traverse adjustments, data collection, rectangular coordinate use, land area computation, public land subdivision, land descriptions, horizontal circular curve field layout/computation, and computer applications. (Prerequisites: 10-607-102, Land Surveying/Computer Appl; 10-607-125, Civil Public Works Construct; and Instructor approval)

10-607-134 SURVEYING DRAFTING ...survey tie drafting, survey map plat drawing, certified survey map drawing, subdivision/preliminary plat drawing, and basic use of AutoCAD and a software in the preparation of drawings. (Prerequisite: 10-607-131, Surveying 2 and Instructor approval needed)

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. (Prerequisites: 10-806-154, General Physics 1; 10-804-195, College Algebra w Apps; 10-804-196, Trigonometry w Apps; and Instructor approval)

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

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

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

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

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

10-607-191 CIVIL ENGINEERING INTERNSHIP ...the application of theory, skills, and techniques in the civil engineering profession. Instructor approval required.
Clinical Laboratory Technician

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
This program prepares learners to act as an entry level Clinical Laboratory Technician. The Clinical Laboratory Technician is a member of the health care team who provides clinical information for disease prevention, medical diagnosis, and treatment of the patient by processing specimens and performing laboratory tests by manual and automated methods. Clinical Laboratory Technicians may also have responsibilities for information processing, training, and quality control monitoring.

Program Outcomes
• Apply modern clinical methodologies including problem solving and trouble shooting according to predetermined criteria.
• Perform preventative and corrective maintenance of equipment and instruments according to predetermined criteria.
• Collect and process biological and other specimens.
• Perform and report results of clinical laboratory tests.
• Apply laboratory results to diagnosis of clinical conditions and/or diseases.
• Monitor and evaluate quality control in the laboratory.
• Practice laboratory safety and regulatory compliance.
• Communicate with colleagues and patients in a professional manner.
• Perform information processing in the clinical laboratory.
• Model professional behaviors, ethics, and appearance.

Clinical Practicum
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us

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.

Employment Potential
Most Clinical Laboratory Technicians work in hospitals or clinic labs. Some Clinical Laboratory Technicians may choose to work for veterinary laboratories, industrial labs, insurance companies, research facilities, environmental labs, or public health.

Clinical 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.

Accreditation
The Clinical 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

Board/Certification Examinations
Graduates are qualified to take the Board of Registry examination from the American Society for Clinical Pathology as well as the credentialed examination of the National Certification Agency for Laboratory Personnel.

Requirements for Program Admission
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• Two years of algebra or one year of algebra and one year of advanced math with a “C” or better (or attain program benchmark for algebra on the Academic Skills Assessment).
• One year of Biology and Chemistry with a grade of “C” or better. If in high school, “C” in two semesters of each.

Priority Admission
Applicants with documentation of completion of Intro to Biochemistry, with a “C” or better, will receive priority standing amongst that year’s applicant pool.

Requirement for Program Entry
• It is strongly recommended that candidates meet the program Academic Skills Assessment benchmarks prior to beginning coursework, or achieve a score of 20 on ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend spring Program Orientation.
• Complete physical examination within three months before entering program and maintain current immunization information.

Note
A candidate who does not meet the above requirements should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.

Curriculum
The Clinical Laboratory Technician Associate Degree is a two-year, five-semester program. Upon completion, a student will have completed 66 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-513-110</td>
<td>Basic Lab Skills</td>
<td>1</td>
</tr>
<tr>
<td>10-513-111</td>
<td>CLT-Phlebotomy</td>
<td>2</td>
</tr>
<tr>
<td>10-513-113</td>
<td>QA/Laboratory Math</td>
<td>1</td>
</tr>
<tr>
<td>10-513-115</td>
<td>Basic Immunology Concepts</td>
<td>2</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
<td>4</td>
</tr>
<tr>
<td>10-806-186</td>
<td>Intro to Biochemistry</td>
<td>3</td>
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Second Semester

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<th>Description</th>
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<tbody>
<tr>
<td>10-513-114</td>
<td>Urinalysis</td>
<td>2</td>
</tr>
<tr>
<td>10-513-120</td>
<td>Basic Hematology</td>
<td>3</td>
</tr>
<tr>
<td>10-513-121</td>
<td>Coagulation</td>
<td>1</td>
</tr>
<tr>
<td>10-513-122</td>
<td>Introduction to Blood Bank</td>
<td>2</td>
</tr>
<tr>
<td>10-513-123</td>
<td>Advanced Blood Bank</td>
<td>2</td>
</tr>
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<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-806-197</td>
<td>Microbiology</td>
<td>4</td>
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Summer Semester

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<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>10-809-198</td>
<td>Intro to Psychology</td>
<td>3</td>
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Third Semester

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<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-513-130</td>
<td>Advanced Hematology</td>
<td>2</td>
</tr>
<tr>
<td>10-513-131</td>
<td>Intro-Clin Chem Diagnostics</td>
<td>3</td>
</tr>
<tr>
<td>10-513-133</td>
<td>Clinical Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
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<td><strong>Semester Total</strong></td>
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Fourth Semester

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<tr>
<td>10-513-140</td>
<td>Adv Topics in Microbiology</td>
<td>2</td>
</tr>
<tr>
<td>10-513-161</td>
<td>Clinical Lab-Practicum</td>
<td>5</td>
</tr>
<tr>
<td>10-513-162</td>
<td>Clinical Lab-Practicum</td>
<td>3</td>
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<tr>
<td>10-513-163</td>
<td>Clinical Lab-Practicum</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>66</strong></td>
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</table>

* 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.

10-513-110 BASIC LAB SKILLS ...explores health career options and the fundamental principles and procedures performed in the clinical laboratory. Learners will utilize medical terminology and basic laboratory equipment. Learners will follow required safety and infection control procedures and perform simple laboratory tests. (Prerequisite: Accepted into Clinical Laboratory Technician Program.)

10-513-111 CLT-PHLEBOTOMY ...this course provides opportunities for learners to perform routine venipuncture, routine capillary puncture and special collection procedures. (Corequisite: 10-513-110, Basic Lab Skills)

10-513-113 QA/LABORATORY MATH ...focuses on performing the mathematical calculations routinely used in laboratory settings. Learners will explore the concepts of quality control and quality assurance in the laboratory. Learners will review regulatory compliance requirements, and certification and continuing education programs. (Prerequisite: Accepted into the Clinical Laboratory Technician program)

10-513-114 URINALYSIS ...prepares learners to perform a complete urinalysis which includes physical, chemical and microscopic analysis. Learners will explore renal physiology and correlate urinalysis results with clinical conditions. (Prerequisites: 10-513-110, Basic Lab Skills and 10-513-113, QA/Lab Math)

10-513-115 BASIC IMMUNOLOGY CONCEPTS ...provides an overview of the immune system including laboratory testing methods for diagnosis of immune system disorders, viral and bacterial infections. (Prerequisite: 10-513-110 Basic Lab Skills; Corequisite: Accepted into Clinical Laboratory Technician program)

10-513-120 BASIC HEMATOLOGY ...covers the theory and principles of blood cell production and function, and introduces the learner to basic practices and procedures in the hematology laboratory. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA/Lab Math; 10-513-111, Phlebotomy; 10-513-115, Basic Immunology Concepts)

10-513-121 COAGULATION ...introduces the theory and principles of coagulation and explores mechanisms involved in coagulation disorders. Emphasis is placed upon laboratory techniques used to diagnose disease and monitor treatment. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA/Lab Math; 10-513-115, Basic Immunology Concepts; 10-513-111, Phlebotomy; Corequisite: 10-513-120, Basic Hematology)

10-513-122 INTRODUCTION TO BLOOD BANK ...introduces basic blood banking concepts and procedures including blood typing and compatibility testing. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA/Lab Math; 10-513-115, Basic Immunology Concepts)

10-513-123 ADVANCED BLOOD BANK ...focuses on advanced blood banking concepts and procedures including work ups for adverse reaction to transfusions and disease states. (Corequisite: 10-513-122, Introduction to Blood Bank)

10-513-130 ADVANCED HEMATOLOGY ...explores mechanisms involved in the development of hematological disorders. Emphasis is placed upon laboratory techniques used to diagnose disorders and monitor treatment. (Prerequisite: 10-513-120, Basic Hematology)

10-513-131 INTRODUCTION TO CLINICAL CHEMISTRY DIAGNOSTICS ...introduces Clinical Chemistry techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Topics in this course include pathophysiology and methodologies for carbohydrate, lipoids, proteins, renal function and blood gas analysis. (Prerequisites: 10-513-110, Basic Lab Skills; 10-513-113, QA/Lab Math; 10-806-193, Anatomy/Physiology-General; 10-513-114, Urinalysis; 10-806-199, Chemistry-Organic & Biological)

10-513-132 ADVANCED CLINICAL CHEMISTRY DIAGNOSTICS ...a continuation of Clinical Chemistry Diagnostics, techniques and procedures for analysis using sophisticated laboratory instrumentation. Topics include pathophysiology and methodologies for hepatic, bone, cardiac markers, tumor markers, endocrine function, fetal function, miscellaneous body fluids, and toxicology. (Corequisite: 10-513-131, Introduction to Clinical Chemistry Diagnostics)

10-513-133 CLINICAL MICROBIOLOGY ...presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification of clinically relevant bacteria. Disease states, modes of transmission and methods of prevention and control, including antibiotic susceptibility testing, are also discussed. (Prerequisites: 10-806-197, Microbiology; 10-513-110, Basic Lab Skills)

10-513-140 ADVANCED TOPICS IN MICROBIOLOGY ...overview of acid fast organisms, fungi, parasites, and anaerobic bacteria. The organisms, their pathophysiology, epidemiology, the diseases and conditions that they cause, laboratory methods of handling, culturing and identification will be discussed. (Prerequisite: 10-513-133, Clinical Microbiology)

10-513-161 CLINICAL LAB-PRACTICUM 1 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Advanced Clinic Chemistry; Corequisites: 10-513-162, Clinical Lab-Practicum 2; 10-513-163, Clinical Lab-Practicum 3)

10-513-162 CLINICAL LAB-PRACTICUM 2 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Advanced Clinic Chemistry; Corequisites: 10-513-161, Clinical Lab-Practicum 1 and 10-513-163, Clinical Lab-Practicum 3)

10-513-163 CLINICAL LAB-PRACTICUM 3 ...clinical applications of knowledge and procedures in hematology/coagulation, urinalysis, microbiology, blood bank, chemistry/serology, preparation for MLT certification examinations. (Prerequisite: 10-513-132, Advanced Clinic Chemistry; Corequisites: 10-513-161, Clinical Lab-Practicum 1 and 10-513-162, Clinical Lab-Practicum 2)
Computer Numeric Control (CNC) Technician

Program Code 324441

Technical Diploma - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The CNC Technician program offers students an additional year of hands-on computer controlled machining and advanced programming experience for graduates of the Machine Tool Operation program.

Program Outcomes
• Control multiple axis CNC machines.
• Use efficient production set up techniques.
• Use advanced CNC programming techniques.
• Control optional features of CNC machines.
• Design and construct jigs and fixtures.
• Use precision measuring practices.

Profile of Incoming Students
• Like to work with numbers.
• Accurate with numbers.
• Problem solvers.
• Critical thinkers.
• 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 Academic Skills Assessment section of this catalog for more information.
• High school diploma or equivalent. (Equivalency may be established through GED testing or other tests.)
• Basic familiarity with Microsoft Windows.
• 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 Control (CNC) Technician/Programmer Operator, Jig and Fixture Apprentice/Trainee, Machinist Apprentice/Trainee, and Manufacturing Engineering Technician.

Computer Numerical Control (CNC) Technician/Programmer Operator: sets up and operates computer numerical controlled machine tools working from blueprints and set-up sheets; sets up fixturing and tooling; produces and inspects parts; and edits CNC programs on CNC lathes and machining centers.

Jig and Fixture Apprentice/Trainee: lays out, fits, and assembles parts to make and repair cutting tools, jigs, fixtures, gauges, or machinist’s hand tools by analyzing specifications.

Machinist Apprentice/Trainee: sets up and operates a variety of machine tools; and fits and assembles parts to fabricate or repair machine tools and to maintain industrial machines.

Manufacturing Engineering Technician: supports production in a CNC machining environment.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Journey Level Machinist
• Pattern Maker
• Mold Maker
• Tool and Die Maker
• CNC Programmer
• Machine Shop Foreperson/Supervisor

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

First Semester
Catalog No. Description Credits
10-804-106 Intro to College Math 3
31-420-304 CNC Fundamentals 1 3
31-420-345 Machine Shop 1 4
31-420-346 Machine Shop 2 4
31-420-348 Precision Measurement 1
31-420-358 CNC Set-Ups 1
31-421-352 Blueprint Rdg/Sket-Mach 1 2
Semester Total 18

Second Semester
31-420-347 Cutting Tool Technology 1
31-420-349 CNC Fundamentals 2 3
31-420-356 Machine Shop 3 4
31-420-357 Machine Shop 4 4
31-421-362 Blueprint Rdg/Sket-Mach 2 2
31-422-359 Metallurgy for Machinist 1
31-801-385 Communicating-Writing 1
Semester Total 16

Third Semester
31-442-361 Welding-Machine Trades 1
32-420-301 Tool Making 4
32-420-303 Tooling Design 2
32-420-335 CNC Turning Operation 3
32-420-336 CNC Machining Center Oper 3
32-420-337 CNC Fundamentals 3
Semester Total 16

Fourth Semester
10-809-197 Contemporary Amer Society 3
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 18
Total Credits 68

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 1 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

31-420-345 MACHINE SHOP 1 ...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. (Corequisite: 31-420-345, Machine Shop 1)

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. (Corequisite: 31-420-358, CNC Set Ups)

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. (Prerequisite: 31-420-304, CNC Fun 1)

31-420-356 MACHINE SHOP 3 ...shop safety, measuring tools/layout, power saws, drilling machine operation, intermediate engine lathed operation and vertical horizontal, CNC milling machine operation, theory/operating grinding machines, operating CNC turning centers. (Prerequisite: 31-420-346, Machine Shop 2)

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. (Corequisite: 31-420-356, Machine Shop 3)

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 dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

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 1)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

31-442-361 WELDING-MACHINE TRADES ...oxyacetylene, brazing, soldering, cutting and hardsurfacing, beads and types of joints, plasma arc cutting, gas metal arc, tungsten metal arc welding.

32-420-301 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. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-302 TOOL DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-303 TOOLING 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. (Prerequisite: Completion of 1st and 2nd semester courses.)

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

Visit our website at: www.nwtc.edu
Computer Support Specialist (IT)

Associate Degree - Two Years

Program Code 101543

Microcomputer Specialist (IT)

Offered at the Green Bay and Marinette campuses. The first year of the program is also offered at the Sturgeon Bay campus.

For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description

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

Program Outcomes

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

Requirements for Program Entry

• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• One year of high school algebra or equivalency.
• Ability to use computer keyboard and mouse.

Employment Potential

A graduate of the program will have the potential for employment as a IT Consultant, Help Desk/Support Specialist, PC Programmer, Computer Sales Representative, IT Trainer, or Network Assistant.

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

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

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

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

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

Network Assistant: helps to configure networks, 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
• IT Department Supervisor

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.

Curriculum

The Computer Support Specialist (IT) Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 68 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-101-102</td>
<td>Accounting-Intro</td>
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<tr>
<td>10-154-150</td>
<td>Micro Hardware-Intro</td>
<td>3</td>
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<tr>
<td>10-154-159</td>
<td>Micro Scripting</td>
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<td>10-154-160</td>
<td>Micro Software-Intro</td>
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<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
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<tr>
<td>10-804-133</td>
<td>Math &amp; Logic</td>
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Second Semester

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<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
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<tr>
<td>10-152-163</td>
<td>Micro Programming-Visual Basic</td>
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<tr>
<td>10-154-152</td>
<td>Micro Operating Systems</td>
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<tr>
<td>10-154-161</td>
<td>Micro Database Theory</td>
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<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
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Third Semester

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<td>10-107-194</td>
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<tr>
<td>10-154-158</td>
<td>Micro Hardware-Advanced</td>
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<tr>
<td>10-154-171</td>
<td>Micro Software Integrat/Auto</td>
<td>3</td>
</tr>
<tr>
<td>10-154-172</td>
<td>Micro Database Application</td>
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</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
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Fourth Semester

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<td>10-107-195</td>
<td>Micro Training</td>
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<td>10-154-180</td>
<td>Micro Web Techniques</td>
<td>3</td>
</tr>
<tr>
<td>10-154-190</td>
<td>Micro Help Desk/End User Sup</td>
<td>2</td>
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<td>10-154-193</td>
<td>Micro Internship</td>
<td>3</td>
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<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
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Suggested Electives:

Project/Change Mgmt 1-MS Project, 10-107-151
Project/Change Mgmt 2-Project Mgr, 10-107-152
Project/Change Mgmt 3-Case Studies, 10-107-153
Network: UNIX/LINUX-Intro, 10-150-157
Network: Structures 1, 10-150-163
Computer: Java-Intro, 10-152-107
Micro Programming C++, 10-152-173
Computer: Visual Basic-Advanced, 10-152-175

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.

10-101-102 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.

10-107-194 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. (Prerequisite: 10-801-195, Communication-Written or equivalent)

10-107-195 MICRO TRAINING...effective presentation skills, plan training content and delivery methods, write lesson plans, provide training materials, conduct training sessions, and assess learners’ grasp of stated objectives. (Prerequisites: 10-107-160, Micro Software-Intro OR 10-154-160, Micro Software-Intro; AND 10-107-162, Micro Hardware/Triblesht-Intro OR 10-154-150, Micro Hardware-Intro)

10-152-163 MICRO PROGRAMMING-VISUAL BASIC...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs is covered. (Prerequisite: 10-154-159, Micro Scripting or experience using a programming language)

10-154-150 MICRO HARDWARE-INTRODUCTION...computer/network terminology, component identification, POST, computer/Peripheral/printer maintenance, system boards, memory, binary/hex systems, FAT vs NTFS, operating system/network installations/configurations, internet research, troubleshooting, command line.

10-154-152 MICRO OPERATING SYSTEMS...explain the role of the microcomputer operating system, implement operating system communications and networking components, perform standard operating system maintenance, and recognize current server and infrastructure device operating systems. (Prerequisites: 10-107-162, Micro Hardware/Triblesht-Intro OR 10-154-150, Micro Hardware-Intro)

10-154-158 MICRO HARDWARE-ADVANCED...advanced micro hardware and operating system configuration and maintenance; disk storage configuration; Windows registry, virus and component troubleshooting, diagnosis, upgrades and repair. (Prerequisites: 10-107-162, Micro Hardware/Triblesht-Intro OR 10-154-150, Micro Hardware-Intro AND 10-107-182, Micro Operating Systems OR 10-154-152, Micro Operating Systems)

10-154-159 MICRO SCRIPTING...introduction to Windows scripting languages and programming techniques. Scripting methodologies will include Windows shell scripts, Windows Script Hosting using VBScript, and Windows Management Instrumentation (WMI).

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

10-154-161 MICRO DATABASE THEORY...fundamentals of database design and administration, including normalization, design methodology, SQL, integrity rules, database management functions and approaches. (Prerequisite: 10-107-160, Micro Software-Intro OR 10-154-160, Micro Software-Intro)

10-154-171 MICRO SOFTWARE INTEGRATION/AUTOMATION...using Visual Basic for Applications (VBA) to automate operations primarily within the Microsoft Excel object model; integration of other Microsoft Office applications/objects; fundamental programming constructs and data manipulations. (Prerequisite: 10-107-160, Micro Software-Intro OR 10-154-160, Micro Software-Intro, AND 10-154-159, Micro Scripting)

10-154-172 MICRO DATABASE APPLICATION...database management and application development including design, automation, and use of relational database management systems. (Prerequisite: 10-154-161, Micro Database Theory)

10-154-180 MICRO WEB TECHNIQUES...web design using HTML, JavaScript, and Java Applet programming. (Prerequisite: 10-107-172, Micro Program-Visual Basic OR 10-152-163, Micro Program-Visual Basic, AND 10-154-159, Micro Scripting)

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

10-154-193 MICRO INTERNSHIP...job-seeking skills; 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 final semester.
Computer Support Technician (IT)

Technical Diploma - One Year

Program Code 311546

Microcomputer Application Software Technician (IT)

Offered at the Marinette and Sturgeon Bay campuses. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description

Computer Support Technician emphasizes problem solving using microcomputer hardware and software facilities including DOS and Windows operating systems, Microsoft Word, and Microsoft Excel.

Program Outcomes

- Develop attractive and effective slide shows using PowerPoint presentation software.
- Develop professional letters and reports using Word document processing software.
- Develop professional and user-friendly spreadsheets using Excel spreadsheet software.
- Develop business applications, which integrate and share different types of files or objects.
- Automate application software operations via macros.
- Install, configure, and maintain computer hardware and peripherals.
- Perform basic computer system functions and operations using the command line and shell scripts.
- Configure and administer common microcomputer operating systems.
- Automate Windows operations using common operating system scripting languages.

Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- One year of high school algebra or equivalent.
- Ability to use computer keyboard and mouse.

Note

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

Employment Potential

A graduate of this program will have the potential for employment as an IT Consultant, or Computer Sales Representative.

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

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

With additional education and/or work experience, graduates may find other opportunities for employment.
- IT Trainer
- Network Assistant

Curriculum

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-101-102</td>
<td>Accounting-Intro</td>
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<tr>
<td>10-154-150</td>
<td>Micro Hardware-Intro</td>
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<tr>
<td>10-804-133</td>
<td>Math &amp; Logic</td>
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Semester Total 18

Second Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-154-163</td>
<td>Micro Programming-Visual Basic</td>
<td>3</td>
</tr>
<tr>
<td>10-154-152</td>
<td>Micro Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>10-154-161</td>
<td>Micro Database Theory</td>
<td>2</td>
</tr>
<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
</tbody>
</table>

Semester Total 17

Total Credits 35

This program is fully eligible for financial aid.
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor. (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in their 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.

10-152-163 MICRO PROGRAMMING-VISUAL BASIC
...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs is covered. (Prerequisite: 10-154-159, Micro Scripting or experience using a programming language.)

10-154-150 MICRO HARDWARE-INTRODUCTION
...computer/network terminology, component identification, POST, computer/peripheral/printer maintenance, system boards, memory, binary/hex systems, FAT vs NTFS, operating system/network installations/configurations, internet research, troubleshooting, command line.

10-154-152 MICRO OPERATING SYSTEMS
...explain the role of the microcomputer operating system, implement operating system communications and networking components, perform standard operating system maintenance, and recognize current server and infrastructure device operating systems. (Prerequisite: 10-107-162, Micro Hardware/Troubleshooting OR 10-154-150, Micro Hardware-Intro)

10-154-159 MICRO SCRIPTING
...introduction to Windows scripting languages and programming techniques. Scripting methodologies will include Windows shell scripts, Windows Script Hosting using VBScript, and Windows Management Instrumentation (WMI).

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

10-154-161 MICRO DATABASE THEORY
...fundamentals of database design and administration, including normalization, design methodology, SQL, integrity rules, database management functions and approaches. (Prerequisite: 10-107-160, Micro Software-Intro OR 10-154-160, Micro Software-Intro)

10-804-133 MATH & LOGIC
...students will apply mathematical problem solving techniques. Topics will include symbolic logic, sets, algebra, Boolean algebra, and number bases. (Prerequisite: Recommended math placement test score of: Accuplacer (Arithmetic) score = 100 and Accuplacer (Elem Algebra) score = 45 OR TABE level math score = 12.9. Note: One year of high school algebra is strongly recommended prior to enrollment; however, algebra is not a pre-requisite requirement.)
Criminal Justice - Corrections

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Criminal Justice – Correction students relate theory to current practice trends, problems, and issues and also study correctional counseling, sociology, and security.

Program Outcomes
- Analyze security procedures.
- Exercise interviewing techniques.
- Examine the state and federal court structure.
- Apply restraints.
- Outline the juvenile and adult criminal justice system.
- Prepare reports.
- Interpret correctional law.
- Summarize probation and parole procedures.
- Demonstrate oral communication skills.
- Compare numerous theories of criminal behavior.
- Contrast various components of the criminal justice system.
- Distinguish numerous functions of community corrections.
- Identify the components that comprise corrections.
- Summarize the administrative and managerial functions within the correctional system.
- Be eligible to become a state certified juvenile detention officer.
- Be eligible to become a state certified jail officer.
- Apply basic math skills.
- Demonstrate keyboarding and computer skills.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent.
- Good writing and communication skills.
- Strong organizational skills.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Employment Potential
A graduate of this 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

Students Seeking Certification as an Officer Can Also:
- Apply principles of subject control.
- Implement jail fire safety.

Students Seeking a Certificate in Community Corrections Can Also:
- Understand substance abuse.
- Compare numerous theories of offender treatment.
- Demonstrate methods of computer crime investigation.
- Understand the basics of Workplace Spanish.

Note: Students should be aware that a previous criminal record will limit their opportunity to gain successful entry-level employment.
- Wisconsin Training and Standards requires a completed criminal background check in order to successfully complete certifiability for training standards. Based upon results of the criminal background check, a student may be denied certifiability.
- If a student chooses to seek the certifiable jail officer track, this student must successfully complete 15 credits of specific courses within the program, fill out application and complete physical before being eligible to take the following certification requirement courses: Principles of Subject Control (POSC), 10-504-188; Jail Health Care & Fire Safety, 10-504-179.

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

First Semester
Catalog No. Description Credits
10-106-145 Keyboarding 1
10-504-114 Police-Nutrition/Fitness 1
10-504-116 Criminal Justice-Intro 3
10-504-122 Correctional Admin 3
10-504-155 Corrections-Community 3
10-801-196 Oral/Interpersonal Comm 3
10-809-199 Psychology Of Human Relations 3

Semester Total 17

Second Semester
Catalog No. Description Credits
10-504-123 Correctional Inst 3
10-504-133 Correctional Sociology 3
10-504-172 Criminology 3
10-801-175 English Composition 1 3
10-801-198 Speech 3
10-804-106 Intro to College Math 3

Semester Total 18

Third Semester
Catalog No. Description Credits
10-103-121 Micro: Word-Intro 1
10-103-141 Micro: Access-Intro 1
10-504-118 Protective Services-Tech Repor 3
10-504-129 Correctional Interviewing 3
10-504-132 Courts/Jurisdiction 3
10-809-166 Intro to Ethics: Theory & App 3
10-809-197 Contemporary Amer Society 3

Semester Total 17

Fourth Semester
Catalog No. Description Credits
10-504-146 Corrections Law 3
10-504-146 Probation/Parole 3
10-504-147 Correctional Security 3
10-504-154 Youth-Chng Community 3
10-809-172 Race Ethnic & Diversity 3

Semester Total 15

Total Credits 67

Suggested Electives:
- Treatment-Criminal Offend, 10-504-119
- Corrections Internship, 10-504-171
- Jail Health Care/Fire Saf, 10-504-179
- Principles of Subject Con, 10-504-188
- Understanding Substance Abuse, 10-550-170

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.

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

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-106-145 KEYBOARDING ...keyboarding at a personal productivity level, correct posture, touch typing on the alpha-numeric keyboard using an interactive software package running on a microcomputer. No experience required.

10-504-114 POLICE-NUTRITION/FITNESS ...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

10-504-116 CRIMINAL JUSTICE-INTRODUCTION ...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-118 PROTECTIVE SERVICES-TECHNICAL REPORTING ...rationale and methods of law enforcement reporting, principles of effective report writing, organizing reports, writing operational law enforcement reports based on case studies. (Prerequisite: 10-801-175 English Comp 1 or 10-801-195 Written Communication)

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.

10-504-129 CORRECTIONAL INTERVIEWING ...process of correctional interviewing using basic skills model; use of nonverbal and verbal communication; securing 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.

Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.
Criminal Justice - Law Enforcement

Associate Degree - Two Years
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

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.

Program Outcomes
• 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.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• High school diploma or equivalent.
• Good writing and communication skills.
• Strong organizational skills.
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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
• Wisconsin Training and Standards requires a completed criminal background check in order to successfully complete certifiability for training standards. Based upon results of the criminal background check, a student may be denied enrollment in some courses.
• A student must successfully complete 30 credits of specific courses within the program, fill out an application, physical, interview and background check before being eligible to take the following certification requirement course: Tactical 1 (10-504-173).
• A student must successfully complete Tactical 1 within the program before being eligible to take the following certification requirement course: Tactical 2 (10-504-174).
• 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: Tactical 1 (10-504-173) and Tactical 2 (10-504-174).

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
Catalog No. Description Credits
10-106-145 Keyboarding 1
10-504-114 Police-Nutrition/Fitness 1
10-504-116 Criminal Justice Intro 3
10-504-131 Professional Communication 3
10-504-132 Courts/Jurisdiction 3
10-801-196 Oral/Interpersonal Comm 3
10-809-199 Psychology Of Human Relations 3

Semester Total 17

Second Semester
10-103-121 Micro: Word-Intro 1
10-103-141 Micro: Access-Intro 1
10-504-142 Constitutional Law 3
10-504-144 Community Police Strategies 3
10-801-175 English Composition 1 3
10-801-198 Speech 3
10-804-106 Intro to College Math 3

Semester Total 17

Third Semester
10-504-112 Traffic Theory 3
10-504-118 Protective Services-Tech Repor 3
10-504-120 Criminal Law 3
10-504-140 Criminal Investigation 3
10-809-166 Intro to Ethics: Theory & App 3
10-809-197 Contemporary Amer Society 3

Semester Total 18

Fourth Semester
10-504-121 Traffic Application 3
10-504-143 Forensic Application 3
10-504-170 Juvenile Law 3
10-531-101 Emergency Response 1
10-809-172 Race Ethnic & Diversity 3
10-847-103 Elective 3

Semester Total 16

Total Credits 68

Suggested Electives:
Law Enforcement Internship, 10-504-176
Police Traffic Radar, 10-504-182
SFST/Drugs That Impair Driving, 47-504-469

All Corrections Science core courses are also recommended electives. Electives required for State certification are:
Tactical 1, 10-504-173
Tactical 2, 10-504-174
Oleoresin Capsicum (O.C.) Training, 47-504-462

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.

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

10-103-141 MICRO: ACCESS-INTRODUCTION...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-106-145 KEYBOARDING...keyboarding at a personal productivity level, correct posture, touch typing on the alpha-numeric keyboard using an interactive software package running on a microcomputer. No experience required.

10-504-112 TRAFFIC THEORY...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.

10-504-114 POLICE-NUTRITION/FITNESS...the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

10-504-116 CRIMINAL JUSTICE-INTRODUCTION...criminal justice, crime picture, criminal law, theories of crime, history of policing, police management, legal aspects, courts, corrections, correction facilities.

10-504-118 PROTECTIVE SERVICES-TECHNICAL REPORTING...rationale and methods of law enforcement reporting, principles of effective report writing, organizing reports, writing operational law enforcement reports based on case studies. (Prerequisite: 10-801-175, English Comp 1 or 10-801-195, Written Communication)

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 TRAFFIC APPLICATION...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 PROFESSIONAL COMMUNICATION...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 CONSTITUTIONAL LAW...arrest and search and seizure of persons, places, and things with or without warrant; cause and procedure to obtain and execute warrants; exclusionary rule and effects of illegal actions.

10-504-143 FORENSIC APPLICATION...processing of crime scenes and use of forensic science in criminal investigations; emphasis on collection, preservation, and court presentation of fingerprint, firearm, impression, trace, body fluid, and document evidence. (Prerequisite: 10-504-140, Criminal Investigation)

10-504-144 COMMUNITY POLICE STRATEGIES...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.
Criminal Justice Law Enforcement Academy

Program Code 305041

Note: To enter this program, the student must have an Associate Degree in Criminal Justice, 60 college credits at grade "C" or better, or be a sworn officer of a law enforcement agency.

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The full-time Criminal Justice Law Enforcement Academy is a 17-credit, 574-hour, 13-week program designed to produce thoroughly competent and confident officers. Students learn the many skills of modern-day law enforcement and practice these skills in realistic environments. The realism afforded by our tactical facilities is unmatched in providing scenario-based training. Graduates of the Academy begin their career with an unparalleled level of professionalism as well as the ability to confront threats of terror to our homeland security.

The Academy faculty comprises a cross-section of full-time educators, law enforcement officers, supervisors and administrators who are established as leaders in law enforcement training. Staff members recognize they are role models of what is being taught and mentors to those attending.

Program Outcomes
Will be certifiable as a law enforcement officer in the state of Wisconsin.

Requirement For Program Entry
To enter this program, the student must have an Associate Degree in Criminal Justice, 60 college credits at grade “C” or better, or be a sworn officer of a law enforcement agency.

Note
• Those who are not sworn officers of a law enforcement agency must submit to a background check (at applicant’s expense), physical fitness assessment and personal interview. Once accepted, these individuals must also complete a drug screen at their own expense. Contact the NWTC Public Safety Department at (920) 491-2627 for details on the application procedure for sworn officers.
• Regardless of prior college credit, all courses must be completed to obtain certifiability with the Law Enforcement Standards Board of the Wisconsin Department of Justice.
• Online application for this program is not available. For program details and application materials, visit www.nwtc.edu/public safety.
• A part-time track is also available. Call (920) 491-2627.
• This program does not qualify for Financial Aid as it does not last an entire semester. Veterans’ Benefits may be used to cover tuition. Contact Enrollment Services for details.

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, or Private Investigator.

Police Officer: performs general traffic and law enforcement duties at the municipal level.

Deputy Sheriff: performs general traffic and law enforcement duties, jailer and telecommunications responsibilities at the county level.

DNR Officer: enforces fish, game, forest and environmental laws at the state level.

State Trooper: performs traffic and law enforcement duties at the state level.

Military Law Enforcement Officer: performs criminal investigations, is responsible for traffic assignments, patrol and general law enforcement duties in any branch of the military service at installations, forts and bases.

Private Investigator: conducts criminal and non-criminal investigations for private business and industry.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Police Administrator
• Chief Deputy
• State Agent
• Federal Agent

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<td>30-504-337</td>
<td>Policing in America</td>
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<td>30-504-338</td>
<td>Legal Context</td>
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<td>30-504-339</td>
<td>Tactical Skills</td>
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<td>30-504-340</td>
<td>Relational Skills</td>
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<td>30-504-341</td>
<td>Patrol Procedures</td>
<td>3</td>
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<td>30-504-342</td>
<td>Investigations</td>
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<td>30-504-343</td>
<td>OMWWI/SFST</td>
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<td>30-504-345</td>
<td>Police-Fit to Serve</td>
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<tr>
<td>30-504-346</td>
<td>Scenario Evaluation</td>
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<td>Semester Total</td>
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<td>Total Credits</td>
<td>17</td>
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</table>
Please Note

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- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions

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

30-504-337 POLICING IN AMERICA ... students learn rules and procedures of Academy; various elements of Criminal Justice System and the Role of Law Enforcement. Students explore belief systems, social pressures, moral problems, decision making.

30-504-338 LEGAL CONTEXT ... students will learn the structure of Criminal Justice System including criminal procedure, arrest, use of force, search, and seizure, the limits on law enforcement activity, classification and elements of crimes.

30-504-339 TACTICAL SKILLS ... students will learn the basis for and the limits to use of force by Wisconsin officers. The specific techniques for intervention will range from empty hands to use of firearms.

30-504-340 RELATIONAL SKILLS ... students write law enforcement reports, role of communication while developing specific skills/strategies for handling emotionally disturbed people, legal basis for emergency placements, testifying in court and community policing strategies.

30-504-341 PATROL PROCEDURES ... students study Wisconsin traffic laws, and enforcement. Investigation of traffic crashes, crash scene management. Emergency vehicle operation, pursuit guidelines, conducting legal vehicle contacts. Arrest procedures, OWI, Emergency Medical Services.

30-504-342 INVESTIGATIONS ... students learn techniques and procedures for interviewing and interrogating. Learn to recognize and handle evidence, the correct law enforcement response to a victim of crime, statutory elements and procedures for sensitive crimes.

30-504-343 OMVWI/SFST ... students will learn to recognize and interpret evidence of OMVWI violation, administer and interpret standardized field sobriety tests, make appropriate enforcement decisions, prepare arrest reports and complete associated paperwork.

30-504-345 POLICE-FIT TO SERVE ... the course will provide an introduction to nutrition and eating correctly for maximum value. Also, an introduction to fitness for a criminal justice professional.

30-504-346 SCENARIO EVALUATION ... Uses scenarios developed by the WI DOJ to evaluate six core abilities critical to success in law enforcement: decision making; tactical skills; emergency management, investigative skills; written and interpersonal communication.
Dental Assistant
Technical Diploma - One Year
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

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

Program Outcomes
• 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.

Clinical Practicum
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.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us.

Students are required to complete an American Heart Association Health Care Provider CPR course prior to DA Clinical Infection Control course. Complete physical/dental examinations and Hepatitis vaccination prior to second semester Dental Assistant Clinical.

Accreditation
The Dental Assistant program is accredited by the American Dental Association-Commission on Dental Accreditation.

Board/Certification Examinations
Graduates of the program are eligible to take the national certification exam offered by the Dental Assisting National Board (DANB), (312) 642-3368.

Requirements for Program Admission
• Candidates submitting an application must take an Academic Skills Assessment or ACT assessment within the last three years.
• Candidates must submit transcripts demonstrating completion of the following with the application: High school diploma or equivalent or youth options student.

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

Requirement for Program Entry
• Meet established Academic Skills Assessment program benchmarks, or minimum standard composite score of 14 on the ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend program orientation.

Suggested Skills for Success
Students are expected to have entry-level computer and keyboarding skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

A science background with emphasis in Advanced Biology and Anatomy and Physiology is highly recommended.

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) $200.00, 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 32 credits.

The second and third semesters are 14 weeks on campus and three weeks off campus for clinical experience.

Start dates for the first semester are June and August.

First Semester
Catalog No. Description Credits
* 10-508-101 Dental Health Safety 1
* 31-508-304 DA-Dental and General Anatomy 2
* 31-508-307 DA-Dental Assst Professionalism 1
Semester Total 4

Second Semester
Catalog No. Description Credits
* 10-508-103 Dental Radiography Application 2
* 10-508-113 Dental Materials 2
* 10-508-120 Dental Office Mgmt 2
* 31-508-302 DA-Dental Chairside 5
* 31-508-306 DA-Dental Assistant Clinical 3
** 31-801-385 Communicating-Writing 1
Semester Total 15

Third Semester
Catalog No. Description Credits
* 31-508-308 DA-Dental Chairside-Adv 5
* 31-508-309 DA-Dental Lab Procedures 4
* 31-508-510 DA-Dental Radiography - Adv 1
* 31-508-311 DA-Dental Assst Clinic - Adv 2
** 31-801-386 Communicating Effectively 1
Semester Total 13
Total Credits 32

* 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.
** Students may take Communicating-Writing (31-508-385) and Communicating Effectively (31-801-386) any semester.

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.

10-508-101 DENTAL HEALTH SAFETY...prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. (Prerequisite: Accepted into the Dental Hygiene or Dental Assistant Programs)


10-508-113 DENTAL MATERIALS...prepares dental auxiliary students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginates impressions on manikins and clean removable appliances. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; 31-508-307, Dental Asst Professionalism OR Admission to Dental Hygiene Program)

10-508-120 DENTAL OFFICE MANAGEMENT...prepares dental auxiliary students to manage telephones, appointments, recall systems, and inventory. Students also develop the skills needed to process accounts receivable and payable, collections, and third party reimbursements. (Prerequisite: Enrolled in Dental Assistant or Dental Hygiene Program)

31-508-302 DA-DENTAL CHAIRSIDE...prepares dental assistant students to chart oral cavity structures, dental pathology, and restorations and to assist a dentist with basic dental procedures including examinations, pain control, amalgam restoration, and cosmetic restoration. Students will also develop the ability to educate patients about preventive dentistry, brushing and flossing techniques, and dental procedures, using lay terminology. Throughout the course, students will apply decoding strategies to the correct use and interpretation of dental terminology. (Prerequisites: 10-508-101, Dental Health Safety; 31-508-304, Dental & General Anatomy; 10-508-307, Dental Asst Professionalism)

31-508-304 DA-DENTAL AND GENERAL ANATOMY...prepares dental assistant students to apply fundamentals of general and dental anatomy to informed decision-making and to professional communication with colleagues and patients. (Corequisite: 10-508-101, Dental Health Safety; 31-508-307, Dental Asst Professionalism)

31-508-306 DA-DENTAL ASSISTANT CLINICAL...students apply skills developed in Dental and General Anatomy, Dental Health Safety, Dental Chairside, Dental Materials, Dental Radiography, and Professionalism in a clinical setting with patients. Emphasizes integration of core abilities and basic occupational skills. (Corequisites: 31-508-302 Dental Chairside, 10-508-113 Dental Materials, 10-508-103 Dental Radiography Applications, 10-508-101 Dental Health Safety, 31-508-304 Dental & General Anatomy, 31-508-307 Dental Asst Professionalism)

31-508-307 DA-DENTAL ASSISTANT PROFESSIONALISM...prepares dental assistant students for professional success in a dental practice or another dental health care environment. Students develop professional appearance and image. More importantly, they learn to work within ethical guidelines and legal frameworks. In preparation for entering the work force, dental assistants customize or develop their portfolios and lay out an on-going professional development plan. (Corequisites: 10-508-101 Dental Hygiene Safety, 31-508-304 Dental & General Anatomy)

31-508-308 DA-DENTAL CHAIRSIDE - ADVANCED...prepares dental assistant students to adapt chairside skills to assisting with dental specialties as they are performed in general practice. Focuses on pediatric dentistry, orthodontics, oral maxillofacial surgery, endodontics, periodontic, and prosthodontics. Students will also develop the ability to assist with sealants, perform coronal polishing, and apply topical fluoride and topical anesthetics. (Prerequisites: 10-508-101 Dental Health Safety, 31-508-304 Dental & Gen Anatomy, 31-508-307 Dental Asst Profess, 31-508-302 Dental Chairside, 10-508-113 Dental Materials, 10-508-103 Dental Radiography Appls, 31-508-306 Dental Asst Clinical)

31-508-309 DA-DENTAL LABORATORY PROCEDURES...prepares Dental Assistant students to produce alginate impressions and fabricate diagnostic models, oral appliances, temporary restorations, and custom trays. Students also polish oral appliances. (Prerequisites: 10-508-101 Dental Health Safety, 31-508-304 Dental & Gen Anatomy, 31-508-307 Dental Asst Profess, 31-508-302 Dental Chairside, 10-508-113 Dental Materials, 10-508-103 Dental Radiography Appls, 31-508-306 Dental Asst Clinical)

31-508-310 DA-DENTAL RADIOGRAPHY - ADVANCED...builds on principles and skills developed in Dental Radiography. Dental Assisting students expose full mouth series, extra-oral and specialized radiographs on adult and child patients. Emphasis is placed on protection against x-ray hazards. Students will also process, mount, and evaluate radiographs for diagnostic value. In addition, they will use radiographs to explain dental health and treatment plans to patients. (Prerequisites: 10-508-101 Dental Health Safety, 31-508-304 Dental & Gen Anatomy, 31-508-307 Dental Asst Profess, 31-508-302 Dental Chairside, 10-508-113 Dental Materials, 10-508-103 Dental Radiography Appls, 31-508-306 Dental Asst Clinical)

Dental Hygienist

Associate Degree - Two Years Plus One Summer

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The Dental Hygienist program prepares students to perform oral prophylaxis, apply preventive agents, expose radiographs, and teach patients oral care.

Program Outcomes
- Incorporate into dental hygiene practice professional laws, regulations and policies established by the licensing state and regulatory agencies.
- Model dental hygiene professional code of ethics in a rapidly changing environment.
- Pursue lifelong professional growth and development through self-directed learning, participation in professional organizations, and continuing education.
- Counsel clients/patients to reduce health risks.
- Provide community oral health services in a variety of settings.
- Infection Control - Manage infection and hazard control.
- Assess data on all aspects of patient/client health using methods consistent with dental hygienist scope of practice and legal principles.
- Formulate a comprehensive dental hygiene care plan in collaboration with the client and other health professionals.
- Provide preventive and therapeutic services that promote oral health according to the needs of the patient/client.
- Evaluate the effectiveness of the implemented client/patient dental hygiene care plan and modify as needed.
- Evaluate the effectiveness of the implemented clinical and educational services and modify as needed.

Clinical Practicum
Students will be required to purchase nametag, uniform, instruments, pay for liability insurance, and cover any other expenses related to clinical experiences.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us.

Accreditation
The Dental Hygienist program is accredited by: The American Dental Association - Commission on Dental Accreditation
211 East Chicago Avenue
Chicago, IL 60611-2678 (312) 440-2500

Board/Certification Examinations
Graduates are eligible or qualified to take the American Board of Dental Hygiene Licensing Exam (formerly known as the Central Regional Dental Testing Exam) and the National Board Dental Hygiene Examination.

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, 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
- Dental Insurance Review Analyst

Requirements for Program Admission
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
- High school diploma or equivalent.
- One year of Algebra and Advanced Math, or equivalent, with a “C” or better (or attain program benchmark for Algebra on the Academic Skills Assessment).
- One year of Biology and Chemistry, or equivalent, with a grade of “C” or better. If in High School, “C” in two semesters of each.

Priority Admission
Applicants with documentation of completion of General Anatomy and Physiology, with a “C” or better, will receive priority standing among that year’s applicant pool.

Requirements for Program Entry
- Meet established Academic Skills Assessment program benchmarks, or achieve minimum standard composite score of 20 on the ACT with acceptable scores in Math, Reading, and English. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
- Attend spring Program Orientation.
- Complete physical and dental examinations within three months before entering program and maintain current immunization information.
- 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.

Credit by Exam
Advance Placement Test Out is available in Radiography and Dental Materials.

Curriculum
The Dental Hygienist Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 69 credits.

Summer Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-508-101</td>
<td>Dental Health Safety</td>
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<tr>
<td>10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
<td>4</td>
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<tr>
<td>10-806-186</td>
<td>Intro to Biochemistry</td>
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First Semester

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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-508-102</td>
<td>DH-Oral Anatomy &amp; Histology</td>
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<td>10-508-105</td>
<td>DH-Dental Hygiene Process 1</td>
<td>3</td>
</tr>
<tr>
<td>10-508-107</td>
<td>DH-Dental Ethics &amp; Professional</td>
<td>1</td>
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<tr>
<td>10-801-195</td>
<td>Written Communication</td>
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</tr>
<tr>
<td>10-806-197</td>
<td>Microbiology</td>
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Second Semester

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<tr>
<td>10-508-103</td>
<td>Dental Radiography Application</td>
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<tr>
<td>10-508-106</td>
<td>DH-Dental Hygiene Process 2</td>
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<td>10-508-108</td>
<td>DH-Periodontology</td>
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<td>10-508-109</td>
<td>DH-Cariology</td>
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<tr>
<td>10-508-110</td>
<td>DH-Nutrition and Dental Health</td>
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<tr>
<td>10-508-111</td>
<td>DH-General &amp; Oral Pathology</td>
<td>3</td>
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Third Semester

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<td>10-508-112</td>
<td>DH-Dental Hygiene Process 3</td>
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<td>10-508-113</td>
<td>Dental Materials</td>
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<td>10-508-114</td>
<td>DH-Dental Pharmacology</td>
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<tr>
<td>10-508-115</td>
<td>DH-Community Dental Health</td>
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<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
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</tr>
<tr>
<td>10-809-198</td>
<td>Intro to Psychology</td>
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Fourth Semester

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<tr>
<td>10-508-116</td>
<td>DH-Dental Pain Management</td>
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<td>10-508-117</td>
<td>DH-Dental Hygiene Process 4</td>
<td>4</td>
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<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
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<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
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<td></td>
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<tr>
<td></td>
<td>Elective</td>
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<tr>
<td></td>
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</tr>
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<td>Total Credits</td>
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</table>

* 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. Core courses are offered one time per year.

Suggested Electives:
- DH-Dental Career Transition, 10-508-118
- DH-Dental Hygiene Board Review, 10-508-119
- Spanish for the Dental Team, 10-802-103

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.

10-508-101 DENTAL HEALTH SAFETY...prepares dental auxiliary students to respond proactively to dental emergencies, control infection, prevent disease, adhere to OSHA Standards, and safely manage hazardous materials. Students also take patient vital signs and collect patient medical/dental histories. CPR certification is a prerequisite; students will be required to show proof of certification before beginning the course. (Prerequisite: Accepted into the Dental Hygiene or Dental Assistant Programs.)

10-508-102 DH-ORAL ANATOMY, EMBRYOLOGY AND HISTOLOGY...prepares Dental Hygienist students to apply detailed knowledge about oral anatomy to planning, implementation, assessment, and evaluation of patient care. Students identify distinguishing characteristics of normal and abnormal dental, head, and neck anatomy and its relationship to tooth development, eruption and health. (Prerequisites: 10-806-177 General Anatomy & Physiology, 10-508-101 Dental Health Safety)


10-508-105 DH-DENTAL HYGIENE PROCESS 1...introduces Dental Hygiene students to the basic technical/clinical skills required of practicing Dental Hygienists including use of basic dental equipment, examination of patients, and procedures within the dental unit. Under the direct supervision of an instructor, students integrate hands-on skills with entry-level critical thinking and problem-solving skills. The course also reinforces the application of Dental Health Safety skills. (Prerequisites: 10-508-101 Dental Health Safety, 10-806-177 Gen Anatomy & Physiology, 10-806-156 Intro to Biochemistry; Corequisite: 10-508-102 DH-Oral Anatomy & Histology)

10-508-106 DH-DENTAL HYGIENE PROCESS 2...this clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process 1. Under the direct supervision of an instructor, students apply patient care assessment, planning, implementation, and evaluation skills to provide comprehensive care for calculus case type 1 and 2 patients and perio case type 0, 1, and II patients. (Prerequisite: 10-508-105 DH-Dental Hygiene Process 1)

10-508-107 DH-DENTAL HYGIENE ETHICS & PROFESSIONALISM...helps student dental hygienists develop and apply high professional and ethical standards. Students apply the laws that govern the practice of dental hygiene to their work with patients, other members of a dental team and the community. Emphasis is placed on maintaining confidentiality and obtaining informed consent. Students enhance their ability to present a professional appearance.


10-508-109 DH-CARIOLOGY...this course focuses on the characteristics and contributing factors of dental decay. Dental Hygiene students help patients minimize caries risk by developing treatment plans, communicating methods to patients, and evaluating treatment results. (Prerequisite: 10-806-186 Intro to Biochemistry, 10-806-197 Microbiology, 10-806-177 General Anatomy & Physiology; Corequisite: 10-508-106 Dental Hygiene Process 2, 10-508-108 Periodontology)

10-508-110 DH-NUTRITION AND DENTAL HEALTH...prepares student dental hygienists to counsel patients about diet and its impact on oral health. Students learn to distinguish between balanced and unbalanced diets and to construct diets that meet the needs of patients with compromised dental/oral health. Students also learn to counsel patients about the effect of eating disorders on dental health. (Corequisite: 10-508-109 Cariology)

10-508-111 DH-GENERAL & ORAL PATHOLOGY...this course prepares the student dental hygienist to determine when to consult, treat or refer clients with various disease, infection or physiological conditions. Students learn to recognize the signs, causes, and implications of common pathological conditions including inflammatory responses, immune disorders, genetic disorders, developmental disorders of tissues and cysts, oral tissue trauma, and neoplasms of the oral cavity. (Corequisites: 10-508-106, Dental Health Process 2, 10-508-103 Dental Radiography Applications; Prerequisites: 10-508-102 Oral Anat, Embryology & Histology, 10-508-105 Dental Hygiene Process 1)

10-508-112 DH-DENTAL HYGIENE PROCESS 3...this clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process II. In consultation with the instructor, students apply independent problem-solving skills in the course of providing comprehensive care for calculus case type 1, 2, and 3 patients and perio case type 0, 1, II, and III patients. Dental Hygiene Process 3 introduces root decontamination using hand and ultra-sonic instruments, manipulation of files, selection of dental implant prophylaxis treatment options, and administration of chemotherapeutic agents. Students also adapt care plans in order to accommodate patients with special needs. (Prerequisites: 10-508-106 Dental Hygiene Process 2, 10-508-108 Periodontology, 10-508-109 Cariology, 10-508-110 DH-Nutrition & Dental Health)

10-508-113 DENTAL MATERIALS...prepares dental auxiliary students to handle and prepare dental materials such as liners, bases, cements, amalgam, resin restorative materials, gypsum products, and impression materials. They also learn to take alginate impressions on manikins and clean removable appliances. (Prerequisite: 10-508-101 Dental Health Safety, 31-508-304 Dental & General Anatomy, 31-508-307 Dental Assit Professionalism OR Admission to Dental Hygiene Program)

10-508-114 DH-DENTAL PHARMACOLOGY...prepares student dental hygienists to select safe and effective patient premedication, local anesthetic, chemotherapeutic and anti-microbial agents within the scope of dental hygiene practice. Students will also learn to recognize potential pharmacological contraindications for specific patients and to take measures to avoid negative impact or alert other members of the dental team to possible negative impact. (Prerequisite: 10-806-186 Intro to Biochemistry, 10-806-197 Microbiology; Corequisite: 10-508-112 Dental Hygiene Process 3)

10-508-115 DH-COMMUNITY DENTAL HEALTH...this course prepares the Dental Hygienist student to play a proactive role in improving the dental health of community members of all ages. Students perform and interpret dental health research to determine community dental health needs. They also participate in the development, implementation and evaluation of a community dental health program. (Prerequisite: 10-508-106 Dental Hygiene Process 2; Corequisite: 10-508-112 Dental Hygiene Process 3)

10-508-116 DH-DENTAL PAIN MANAGEMENT...this course prepares the student dental hygienist to work within the scope of dental hygiene practice to manage pain for dental patients. Students learn to prevent and manage common emergencies related to administration of local anesthesia, prepare the armamentarium, and administer local anesthesia. The course also addresses the recommendation of alternative pain control measures. (Prerequisites: 10-508-102 Oral Anatomy, Embryology & Histology, 10-508-114 Dental Pharmacology, 10-508-112 Dental Hygiene Process 3)

10-508-117 DH-DENTAL HYGIENE PROCESS 4...this clinical course builds on and expands the technical/clinical skills student dental hygienists developed in Dental Hygiene Process III. With feedback from the instructor, students manage all aspects of cases in the course of providing comprehensive care for calculus case type 0, 1, 2, and 3 patients and for perio case type 0, 1, II, and III patients. Emphasizes maximization of clinical efficiency and effectiveness. Prepares student dental hygienists to demonstrate their clinical skills in a formal examination situation. (Prerequisite: 10-508-112 Dental Hygiene Process 3; Corequisite: 10-508-116 Dental Pain Management)
Diagnostic Medical Sonography

Associate Degree - Two Years
Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Graduates perform routine sonographic (ultrasound) examinations of the body to include the abdomen, small parts, obstetrics, and gynecology. They work closely with physicians and may assist in the performance of invasive procedures.

Program Outcomes
- Apply knowledge of anatomy, physiology, positioning, and sonographic techniques to accurately demonstrate anatomical structures.
- Evaluate sonographic images for appropriate positioning and image quality.
- Exercise independent judgment and discretion in the technical performance of medical imaging procedures.
- Anticipate and provide patient comfort and safety through effective communication, interpersonal relationships, and application of body mechanics.
- Modify sonographic procedures to meet specific patient conditions.
- Function as a member of a health care system through effective procedures.
- Recognize emergency patient conditions and initiate basic life support procedures.
- Evaluate the performance of Sonography systems using quality assurance procedures and report malfunctions to proper authorities.
- Participate in career and socioeconomic opportunities available in sonographic technology through membership in professional organizations and continuing education.

Clinical Practicum
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us.

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.

Employment Potential
A graduate of the Diagnostic Medical Sonography program can choose to work in a variety of health care settings including clinics, hospitals, private practice physician offices, public health facilities and laboratories performing examinations in their areas of specialization.

Career advancement opportunities exist in education, administration, research, and in commercial companies as education/application specialists, sales representatives, technical advisors, etc.

Accreditation
The Diagnostic Medical Sonography Program is accredited by the Commission on Accreditation of Allied Health Education Programs.

Board/Certification Examinations
Graduates are qualified to take the Obstetric/Gynecology, Abdomen, and Physics Boards through the Association of Registered Diagnostic Medical Sonographers (ARDMS).

Requirements For Program Application
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
- High school diploma or equivalent.
- One year of Algebra, Biology, Chemistry, and Physics with a grade of "C" or better. If high school courses, “C” in two semesters of each.

Candidates submitting applications to the DMS program must also provide:
- Three completed reference forms (professional and academic).
- An essay (no more than 1,000 words) outlining the following information: a description of why they are interested in the profession, their current knowledge of the profession, and why they are a good candidate for the program.

The DMS program follows a competitive enrollment process whereby candidate applications are reviewed by a Selection Committee. Candidates are ranked in the following categories: Assessment, Math/Science, Essays, References, The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have the opportunity to re-apply.

Requirements for Program Entry From Wait List
- Attend spring Program Orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Curriculum
The Diagnostic Medical Sonography program is a two-year, two-summer, six-semester program. Upon graduation a student will have completed 68 credits.

Summer semester core classes are scheduled to begin mid-May and end mid-July.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>* 10-501-101</td>
<td>Medical Terminology</td>
<td>3</td>
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<tr>
<td>* 10-526-204</td>
<td>DMS-Intr to DMS</td>
<td>3</td>
</tr>
<tr>
<td>* 10-526-205</td>
<td>DMS-Patient Care &amp; Ethics</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>* 10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
<td>4</td>
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<tr>
<td>* 10-526-206</td>
<td>DMS-Sono Physics &amp; Instrument</td>
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<tr>
<td>* 10-526-207</td>
<td>DMS-Abdominal Sonography</td>
<td>4</td>
</tr>
<tr>
<td>* 10-526-208</td>
<td>DMS-OB/GYN Sonography 1</td>
<td>3</td>
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<tr>
<td>10-801-196</td>
<td>Written Communication</td>
<td>3</td>
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<tr>
<td>* 10-806-179</td>
<td>Anatomy &amp; Physiology</td>
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Summer Semester

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<tbody>
<tr>
<td>* 10-526-209</td>
<td>DMS-DMS Clinical 1</td>
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<td>* 10-526-210</td>
<td>DMS-Cross Sectional Anatomy</td>
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Third Semester

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<tr>
<td>* 10-526-211</td>
<td>DMS-Sono of Superficial Struct</td>
<td>2</td>
</tr>
<tr>
<td>* 10-526-212</td>
<td>DMS-OB/GYN Sonography 2</td>
<td>3</td>
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<tr>
<td>* 10-526-213</td>
<td>DMS-DMS Clinical 2</td>
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<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
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<td>10-809-198</td>
<td>Intro to Psychology</td>
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Fourth Semester

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<tr>
<td>* 10-526-214</td>
<td>DMS-Intr to Cardiac &amp; Vasc</td>
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<tr>
<td>* 10-526-215</td>
<td>DMS-DMS Clinical 3</td>
<td>4</td>
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<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
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<td></td>
<td>Elective</td>
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Summer Semester

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<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>* 10-526-216</td>
<td>DMS-DMS Clinical 4</td>
<td>2</td>
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<tr>
<td>* 10-526-217</td>
<td>DMS-Registry Review</td>
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<td></td>
<td><strong>Semester Total</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>

* 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.

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-526-204 DMS-INTRO TO DIAGNOSTIC MEDICAL SONOGRAPHY...introduces learners to the field of Diagnostic Medical Sonography. Explores the duties and functions of the Diagnostic Medical Sonographer as well as the historical background. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-205 DMS-PATIENT CARE AND ETHICS...introduces the principles of patient care including patient assessment, monitoring, handling and transporting. Legal and ethical issues related to Sonography are also examined. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-206 DMS-SONOGRAPHY PHYSICS AND INSTRUMENTATION...introduces physics and instrumentation relevant to diagnostic medical sonography. Learners explore how principles of sound propagation in tissues create a sonographic image. (Prerequisites: 10-526-204, DMS-Intro to DMS; 10-526-205, DMS-Patient Care & Ethics)

10-526-207 DMS-ABDOMINAL SONOGRAPHY...prepares learners to perform ultrasounds of the abdominal organs including liver, gallbladder, biliary tree, pancreas, spleen, urinary tract, aorta and retroperitoneum. Practice scan sessions included. (Prerequisites: 10-526-204, DMS-Intro to DMS; 10-526-205, DMS-Patient Care & Ethics; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-208 DMS-OB/GYN SONOGRAPHY 1 ...prepares learners to perform ultrasounds of the nongravid uterus and the first-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female reproductive system as well as intrauterine and ectopic pregnancies. (Prerequisites: 10-524-204, DMS-Intro to DMS; 10-526-205, DMS-Patient Care & Ethics; 10-501-101, Medical Terminology; 10-806-177, Gen Anatomy & Physiology; Corequisite: 10-806-179, Adv Anatomy & Physiology)

10-526-209 DMS-DMS CLINICAL 1 ...opportunities to apply scanning skills in a clinical setting. Students concentrate on ultrasound examinations of the abdominal organs. Participation in this course will take place at a hospital or clinic. (Prerequisites: 10-526-206, DMS-Sono Physics & Instrument; 10-526-207, DMS-Abdominal Sonography; 10-526-208, DMS-OB/GYN Sonography 1)

10-526-210 DMS-CROSS SECTIONAL ANATOMY ...introduces cross sectional anatomy as related to Diagnostic Medical Sonography. Includes correlating images from other imaging modalities. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-211 DMS-SONOGRAPHY OF SUPERFICIAL STRUCTURES...investigates superficial structure imaging. Includes anatomy, pathophysiology, and sonographic evaluation. Prepared learner to perform ultrasounds of the thyroid, breast, male reproductive system, musculoskeletal system, and GI tract. (Prerequisites: 10-526-207, DMS-Abdominal Sonography; 10-526-206, DMS-Sono Physics & Instrument; 10-526-210, DMS-Cross Sectional Anatomy)

10-526-212 DMS-OB/GYN SONOGRAPHY 2 ...prepares learners to perform ultrasounds of the second and third-trimester pregnancy. Explores the anatomy, physiology, and pathology of the female pelvis and the developing fetus. (Prerequisite: 10-526-208, DMS-OB/GYN Sonography 1)

10-526-213 DMS-DMS CLINICAL 2...further experience in a clinical setting allows the student to continue to improve technical skills while accepting more responsibilities during scanning procedures. (Prerequisite: 10-526-209, DMS-DMS Clinical 1)

10-526-214 DMS-INTRO TO CARDIAC AND VASCULAR...introduces the uses of cardiac and vascular sonography. Explores the differences from the general concentration of ultrasound. Learners outline the components of cardiac and vascular exams and learn to correlate results with other diagnostic procedures. (Prerequisite: Accepted into the Diagnostic Medical Sonography Program)

10-526-215 DMS-DMS CLINICAL 3 ...provides further opportunity for students to expand their skills in a clinical setting. Students begin to function as team members under the guidance of the instructor and authorized clinical personnel. (Prerequisite: 10-526-213, DMS-DMS Clinical 2)
Diesel and Heavy Equipment Technician

Technical Diploma - Two Years

Offered at the Sturgeon Bay campus. For information: (920) 746-4900.
Toll-free: (800) 422-NWTC, ext. 5444.

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

Program Outcomes
- Apply hydraulic systems fundamentals.
- Manage chassis, steering, and suspension systems.
- Explain diesel engine systems.
- Explain diesel engine fundamentals.
- Describe the mechanics of track drive systems.
- Perform required preventative maintenance.
- Use welding and machine tools.
- Maintain brake systems.
- Analyze electronic/electrical systems.
- Manage heating - AC systems.
- 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 Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent. (Equivalency may be established through GED testing or other tests.)
- Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of this catalog.

Accreditation
The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians.

The NWTC Diesel and Heavy Equipment Technician program is an AED Foundation (Associated Equipment Dealers) Certified Program.

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 preventative 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, a student will have completed 66 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-103-111</td>
<td>Micro: Windows-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-412-100</td>
<td>Diesel Lab Operations Tech</td>
<td>1</td>
</tr>
<tr>
<td>10-412-108</td>
<td>Inte Combust Eng Tech-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-412-109</td>
<td>Diesel Engine Service-Fundam</td>
<td>5</td>
</tr>
<tr>
<td>10-412-112</td>
<td>Diesel Electrical Sys 1 Te</td>
<td>3</td>
</tr>
<tr>
<td>10-602-118</td>
<td>DC Electricity Technology</td>
<td>1</td>
</tr>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
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<tr>
<td>32-442-352</td>
<td>Welding-Metal Working Prod</td>
<td>2</td>
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Second Semester

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<tr>
<td>10-412-120</td>
<td>Diesel-Chassis/Susp/Steer Tech</td>
<td>4</td>
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<tr>
<td>10-412-121</td>
<td>Diesel-Brake Systems Technol</td>
<td>3</td>
</tr>
<tr>
<td>10-412-122</td>
<td>Diesel Preventive Maint Techn</td>
<td>4</td>
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<tr>
<td>10-412-123</td>
<td>Diesel-Elec Systems Technol</td>
<td>3</td>
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<tr>
<td>32-806-353</td>
<td>Science-Mechanics</td>
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Third Semester

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<tbody>
<tr>
<td>10-412-124</td>
<td>Diesel-Electric Eng System Tec</td>
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<td>10-412-134</td>
<td>Diesel Engine Systems Technol</td>
<td>4</td>
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<tr>
<td>10-412-136</td>
<td>Diesel-Mobile Hydraulic Sys Te</td>
<td>2</td>
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<tr>
<td>10-412-137</td>
<td>Diesel-Schematic Interpret Tec</td>
<td>2</td>
</tr>
<tr>
<td>10-412-138</td>
<td>Diesel-Track Drive Systems Tec</td>
<td>2</td>
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<tr>
<td>10-412-142</td>
<td>Diesel Equip Service/Maint Tec</td>
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<tr>
<td>10-419-169</td>
<td>Hydraulics Technology</td>
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Fourth Semester

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<tr>
<td>10-412-140</td>
<td>Diesel Engine Troubleshoot Tec</td>
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<tr>
<td>10-412-141</td>
<td>Diesel-Power Trains Technol</td>
<td>5</td>
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<tr>
<td>10-412-145</td>
<td>Diesel-Refrig/AC Technol</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
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<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
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<td>31-801-386</td>
<td>Communicating Effectively</td>
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<tr>
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<td><strong>Total Credits</strong></td>
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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.
Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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.

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-109 DIESEL ENGINE SERVICE TECHNOLOGY-FUNDAMENTALS ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-103-111, Diesel Electrical Systems 1 Tech)

10-412-123 DIESEL-ELECT SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpillar systems, and testing methods. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-136 DIESEL-MOBILE HYDRAULIC SYSTEM TECHNOLOGY ...mobile hydraulics system components safety, principles of operation, diagnosis, and service.

10-412-137 DIESEL-SCHEMATIC INTERPRET TECHNOLOGY ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/ schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-138 DIESEL-TRACK DRIVE SYSTEMS TECHNOLOGY ...track shop safety, track drive component parts, system operation, inspection, system diagnoses, system repair, system service, and system maintenance. (Corequisite: 10-412-100, Diesel-Lab Operations)

10-412-140 DIESEL ENGINE TROUBLESHOOT TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-142 DIESEL EQUIP SERVICE/MAINT TECHNOLOGY ...shop safety; service manuals; preventive maintenance forms; federal inspection policy; preventive maintenance for trucks, trailers, engine brakes/retarders, construction, and agricultural equipment; and electronic trouble shooting trees. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

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. (Corequisite: 10-602-160, Auto Prep Tech)
Diesel Equipment Technology

Associate Degree - Two Years

Offered at the Sturgeon Bay campus. For information: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Prepares students to service and repair diesel powered equipment and prepare graduates for management, ownership, supervisory level positions and advanced educational options. Instruction incorporates repair of steering, brakes, hydraulic systems, and chassis components.

Program Outcomes
• Apply hydraulic systems fundamentals.
• Manage chassis, steering, and suspension systems.
• Explain diesel engine systems.
• Explain diesel engine fundamentals.
• Perform required preventive maintenance
• Maintain brake systems.
• Analyze electronic/electrical systems.
• Manage heating - A/C systems.
• Comprehend power train systems.
• Interpret schematic drawings.
• Diagnose engine systems.
• Service vehicle systems.
• Communicate effectively with the customer.
• Complete customer repair orders accurately.
• Organize a daily work schedule.
• Tabulate a daily time sheet of technician's repair work.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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 math, science and technology education would be beneficial.
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Accreditation
The NWTC Diesel and Heavy Equipment Technician program is ASE Certified to NATEF (National Automotive Technicians Education Foundation) Standards. Additionally, all instructional staff in the NWTC Diesel and Heavy Equipment Programs are, at a minimum, Master, ASE Certified Technicians.

The NWTC Diesel and Heavy Equipment Program Technician is an AED Foundation (Associated Equipment Dealers) Certified Program.

Employment Potential
The Diesel Equipment Technology graduate is employed in a variety of work environments. These include heavy equipment, truck, agriculture, marine, engine systems and specialty shops.

A graduate of the program will have the potential for employment as a Diesel and Heavy Equipment Technician, Related Specialist Technician, Related Parts Support Manager, Industry Related Service Manager-Supervisor, Industry Related Sales Representative, Business Owner or Educational Trainer.

Diesel and Heavy Equipment Technician: diagnoses, services, and repairs a variety of heavy equipment ranging from over-the-road trucks, off-road construction equipment, agricultural equipment, and potentially stationary power supply engines.

Related Specialist Technician: diagnoses, services, and repairs fuel injection systems, hydraulics systems, trailer service and other specialty areas.

Related Parts Support Manager: Manages a parts department within a repair facility.

Industry Related Service Manager-Supervisor: manages technician performance, directs work flow, tracks work progress, coordinates service business profitability, reports to Operations level management.

Industry Related Sales Representative: sales position within the diesel and heavy equipment industry or support business to the industry.

Business Owner: owns own business related to the diesel and heavy equipment or support business.

Educational Trainer: With additional study and transfer to a four-year baccalaureate college, a graduate could pursue a four-year degree in secondary, post-secondary or industry technical training industry.

Curriculum
The Diesel Equipment Technology Associate Degree is a two-year, four-semester program offered at the Sturgeon Bay campus. Upon graduation, a student will have completed 67 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>10-412-100</td>
<td>Diesel Lab Operations Tech</td>
<td>1</td>
</tr>
<tr>
<td>10-412-108</td>
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<td>10-412-109</td>
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</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-412-120</td>
<td>Diesel-Chassis/Susp/Steer Tech</td>
<td>4</td>
</tr>
<tr>
<td>10-412-121</td>
<td>Diesel-Brake Systems Technolol</td>
<td>3</td>
</tr>
<tr>
<td>10-412-122</td>
<td>Diesel Preventive Maint Technol</td>
<td>4</td>
</tr>
<tr>
<td>10-412-123</td>
<td>Diesel-Elect Systems Technolol</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
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Third Semester

<table>
<thead>
<tr>
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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-412-124</td>
<td>Diesel-Electric Eng System Tec</td>
<td>1</td>
</tr>
<tr>
<td>10-412-134</td>
<td>Diesel Engine Systems Technolol</td>
<td>4</td>
</tr>
<tr>
<td>10-412-137</td>
<td>Diesel-Schematic Interpret Tec</td>
<td>2</td>
</tr>
<tr>
<td>10-419-169</td>
<td>Hydraulics Technology</td>
<td>2</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Semester Total</strong></td>
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Fourth Semester

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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-412-140</td>
<td>Diesel Engine Troubleshoot Tec</td>
<td>4</td>
</tr>
<tr>
<td>10-412-141</td>
<td>Diesel-Power Trains Technology</td>
<td>5</td>
</tr>
<tr>
<td>10-412-145</td>
<td>Diesel-Refrig/AC Technology</td>
<td>3</td>
</tr>
<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>67</strong></td>
</tr>
</tbody>
</table>

Recommended off campus work experiences, 20 hours in each area:
• Diesel and Heavy Equipment Service Writer
• Diesel and Heavy Equipment Service Manager
• Diesel and Heavy Equipment Shop Foreman
• Diesel and Heavy Equipment Parts Manager
• Diesel and Heavy Equipment Warranty Claims Person
• Diesel and Heavy Equipment Service Department Manager
• Diesel and Heavy Equipment Human Relations Manager
• Other areas with instructor’s approval

Note
• A three to five page paper or specialty assignments are required for courses applied to an associate degree. Individual instructor requirements will be received at program orientation and listed in each course syllabus.
• 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.
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444. Descriptions of courses not found on this page can be found in the back of this catalog.

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

10-412-100 DIESEL LAB OPERATIONS TECHNOLOGY ...diesel shop safety, basic equipment operation, rigging and lifting, hand and power precision tools, fasteners and hazard material handling procedures.

10-412-108 INTERNAL COMBUSTION ENGINE TECHNOLOGY - INTRO TO ...basic internal combustion (IC) engine types, IC engine classifications and applications, IC engine theory and operation, IC engine construction and careers in IC engine service and repair.

10-412-109 DIESEL ENGINE SERVICE TECHNOLOGY-FUNDAMENTALS ...diesel engine service procedures; lubrication, cooling, fuel intake and exhaust systems, bearings, seals and basic diesel engine diagnosis.

10-412-112 DIESEL ELECTRICAL SYSTEMS 1 TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field.

10-412-120 DIESEL-CHASSIS/SUSP/STEER TECHNOLOGY ...vehicular steering systems, heavy-duty axles, suspension systems, wheels and tires, coupling systems. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-412-121 DIESEL-BRAKE SYSTEMS TECHNOLOGY ...braking systems, drum brake principles, disc brakes, foundation brake systems, air brakes, anti-lock systems. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-122 DIESEL PREVENTIVE MAINTENANCE TECHNOLOGY ...safety terms, maintenance, inspection, lubricants, clutch, brakes, wheels and rims, steering, suspension, electrical, air system, and hydraulic system. (Corequisite: 10-412-100, Diesel Lab Operations Tech)

10-412-123 DIESEL-ELECTRICAL SYSTEMS TECHNOLOGY ...will cover but not be limited to: electronic components, electrical safety, storage batteries, charging and starting systems. Knowledge, skills and understanding required for employment in the diesel field. (Prerequisite: 10-412-112, Diesel Electrical Systems 1 Tech)

10-412-124 DIESEL-ELECTRIC ENG SYSTEM TECHNOLOGY ...engine, drive train, chassis, and cab computer systems software.

10-412-134 DIESEL ENGINE SYSTEMS TECHNOLOGY ...shop safety, fuel system components, governors, nozzles, American Bosch systems, Robert Bosch systems, Lucas systems, Stanadyne systems, Cummins systems, Detroit Diesel systems, Caterpillar systems, and testing methods. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-137 DIESEL-SCHEMATIC INTERPRETATION TECHNOLOGY ...electronic/hydraulic schematics, applications of schematics, system similarities, components, review of systems operation, practical applications in diagnosing system problems, use of special test equipment/schematics to solve problems. (Prerequisite: 10-412-123, Diesel Electrical Systems Tech II)

10-412-140 DIESEL ENGINE TROUBLESHOOTING TECHNOLOGY ...diesel engine troubleshooting steps, major check points when inspecting or operating a diesel engine, causes of poor engine performance and failure, perform engine diagnostic tests, dyno test an engine. (Prerequisite: 10-412-109, Diesel Engine Ser Fund Tech)

10-412-141 DIESEL-POWER TRAINS TECHNOLOGY ...safety, power train components, coupling systems, hydraulic retarders, mechanical transmissions, drive shafts, final drives, gear reduction boxes, planetary gear sets, chain-type final drive, belt drive systems.

10-412-145 DIESEL-REFRIG/AC TECHNOLOGY ...safety; basics of air conditioning; refrigerants and oil; basic system and its functions; environmental safety practices; inspection, diagnosing, and using service tools. (Corequisite: 10-412-100, Diesel-Lab Operations Tech)

10-419-169 HYDRAULICS TECHNOLOGY ...will cover the following but not limited to hydraulics principles, system schematics and symbols, pumps, valves, cylinders, motors, accumulators, filters, reservoirs, hydraulic seals, fluids, maintenance, and safety rules.

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. (Corequisite: 10-602-160, Auto Prep Tech)
Program Description
The E-Business Technology Specialist program prepares students to integrate web technologies to support Internet-based business systems using concepts in database integration, programming, graphics, marketing, logistics, security, and networking. This flexible degree program is best suited for an individual with sufficient work experience to enable selection of the two tracks that match career interest and organizational need.

After admission, each learner is required to complete a program planner indicating tracks selected and outlining a tentative course completion timeline. This plan will be reviewed and approved by an instructor before enrolling in courses.

Program Outcomes
• Communicate effectively.
• State and solve technical problems.
• Describe the natural world.
• Interact within society.
• Demonstrate an understanding of business models and organizational functions necessary to conduct business in a changing environment.
• Analyze accounting information and relate it to business decision.
• Effectively apply business math models when analyzing and solving problems.
• Use project management techniques.

Grades selecting the Computer Support track will also be able to:
• Provide end-user support in various environments.
• Design hardware and software documentation.
• Train end users to use their systems more efficiently.
• Design effective documents, spreadsheets, and presentations using application software.

Grades selecting the Programming track will also be able to:
• Create, edit, run, and debug programs in four languages: Java, Visual Basic, C++, Windows Scripting.
• Create interactive programs.
• Solve business problems using programming techniques.
• Define and manipulate data structures, including variables, tables, and files.
• Produce output and reports.

Grades selecting the E-Commerce track will also be able to:
• Understand the business models underlying electronic commerce.
• Effectively research business and consumer markets to create electronic business marketing strategies.
• Develop an electronic commerce-marketing plan.

Grades selecting the Website Development track will also be able to:
• Design and develop dynamic websites.
• Code website formatting styles.
• Develop interactive web graphics.
• Design and code web animation.
• Create functional website navigation.
• Test website usability.
• Upload and manage websites.

Grades selecting the Multimedia Technologies track will also be able to:
• Design multimedia products.
• Create digital video.
• Develop and implement media content for use in Broadcast, Web, and Education.
• Create open standard projects from concept to final output.

Grades selecting the Networking track will also be able to:
• Design a local area network (LAN) per specifications and using required physical components.
• Install network hardware including modems, interface cards, and cabling.
• Install and configure network and desktop operating system software.
• Design, implement, and maintain a secure network environment.

Grades selecting the Web Database Integrator track will also be able to:
• Develop, build, and configure a web application to work with an application server.
• Create a database design and effective interface to support a web application.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• One year of high school algebra or equivalency.
• Computer familiarity and ability to use a keyboard and mouse.

Note
If a student completes a track in this program, they are eligible to receive the certificate of the same title.

Employment Potential
Program graduates may work in a variety of areas of an organization depending upon their selection of course tracks. A graduate of the program will have the potential for employment as Web Developer, E-Business Developer/ E-Commerce Specialist, Web Technical Support, Web Analyst/E-Business Analyst, Web Programmer, and Consultant. Some positions may require additional education and/or work experience.

Web Developer: designs, implements, and maintains intranet and internet web applications/sites.

E-Business Developer/E-Commerce Specialist: creates business strategies and plans for providing web-based business-to-business or business-to-consumer support and service.

Web Technical Support: develops and maintains internal system support processes and coordinates the integration of the web with other computer systems.

Web Analyst/E-Business Analyst: track and analyze key business metrics related to web activities.

Web Programmer: develops software code for web-based applications.

Consultant: work with clients to improve the efficiency and effectiveness of the e-business infrastructure.

This program is fully eligible for financial aid.

Northeast Wisconsin Technical College 2006-2007 Catalog
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.

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

Curriculum
The E-Business Technology Specialist Associate Degree is a flexible degree program consisting of a common curriculum of general education and business support courses. The learner is required to select two tracks of occupational courses. Learners are required to meet with a counselor and create a program plan, which will be sent to the Business and Information Technology Division. Upon graduation, a student will have completed 68 credits.

All Students Must Complete

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-101-102</td>
<td>Accounting-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-104-110</td>
<td>Marketing Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-135-100</td>
<td>E-Business Tech Internship</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
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</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
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</tr>
<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math w Business Apps</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-804-133</td>
<td>Math &amp; Logic</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
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<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
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<td>Credits</td>
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<td>32</td>
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Learners select two of the following course tracks:

Computer Support

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-107-194</td>
<td>Micro Documentation</td>
<td>2</td>
</tr>
<tr>
<td>10-107-195</td>
<td>Micro Training</td>
<td>2</td>
</tr>
<tr>
<td>10-154-150</td>
<td>Micro Hardware-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-154-152</td>
<td>Micro Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>10-154-158</td>
<td>Micro Hardware-Advanced</td>
<td>3</td>
</tr>
<tr>
<td>10-154-160</td>
<td>Micro Software-Intro</td>
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</tr>
<tr>
<td>10-154-190</td>
<td>Micro Help Desk/End User Sup</td>
<td>2</td>
</tr>
<tr>
<td>Credits for Computer Support</td>
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</tbody>
</table>

Programming

<table>
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<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tr>
<td>10-152-107</td>
<td>Computer: Java-Intro</td>
<td>3</td>
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<tr>
<td>10-152-137</td>
<td>Computer: Application Dev</td>
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</tr>
<tr>
<td>10-152-163</td>
<td>Micro Programming-Visual Basic</td>
<td>3</td>
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<tr>
<td>10-152-173</td>
<td>Micro Programming C++</td>
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</tr>
<tr>
<td>10-152-175</td>
<td>Computer: VisualBASIC-Adv</td>
<td>3</td>
</tr>
<tr>
<td>10-154-159</td>
<td>Micro Scripting</td>
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<tr>
<td>Credits for Programming</td>
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</table>

E-Commerce

<table>
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<tr>
<th>Catalog No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>10-104-112</td>
<td>E-Commerce Implement Plan</td>
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</tr>
<tr>
<td>10-104-115</td>
<td>E-Commerce Online Strategies</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
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<tr>
<td>10-104-198</td>
<td>Market Research</td>
<td>3</td>
</tr>
<tr>
<td>10-104-116</td>
<td>E-Commerce Database Mktg</td>
<td>3</td>
</tr>
<tr>
<td>10-104-118</td>
<td>E-Commerce Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-104-119</td>
<td>E-Commerce Web Marketing</td>
<td>3</td>
</tr>
<tr>
<td>10-182-130</td>
<td>E-Comm Logistics/Fulfil</td>
<td>3</td>
</tr>
<tr>
<td>Credits for E-Commerce</td>
<td>18</td>
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</tbody>
</table>

Note: Students taking the Website Development or Multimedia Technologies tracks should have a working knowledge of Macintosh computers and/or graphic software.

Website Development

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-111-150</td>
<td>Web Graphic Design</td>
<td>3</td>
</tr>
<tr>
<td>10-111-151</td>
<td>Website Design</td>
<td>3</td>
</tr>
<tr>
<td>10-111-152</td>
<td>Web Animation Design</td>
<td>3</td>
</tr>
<tr>
<td>10-111-161</td>
<td>Macintosh Illustration</td>
<td>3</td>
</tr>
<tr>
<td>10-111-172</td>
<td>Web Animation Programming</td>
<td>3</td>
</tr>
<tr>
<td>10-111-175</td>
<td>Website Coding</td>
<td>3</td>
</tr>
<tr>
<td>Credits for Website Development</td>
<td>18</td>
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</table>

Multimedia Technologies

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-111-101</td>
<td>Macintosh-Image Editing</td>
<td>3</td>
</tr>
<tr>
<td>10-111-104</td>
<td>Photography-Digital</td>
<td>3</td>
</tr>
<tr>
<td>10-111-105</td>
<td>DVD Authoring</td>
<td>3</td>
</tr>
<tr>
<td>10-111-111</td>
<td>Marketing 1-Visual Design</td>
<td>3</td>
</tr>
<tr>
<td>10-111-154</td>
<td>Macintosh-Multimedia Authoring</td>
<td>3</td>
</tr>
<tr>
<td>10-111-159</td>
<td>Graphic Workstations-Adv</td>
<td>3</td>
</tr>
<tr>
<td>Credits for Multimedia Technologies</td>
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Networking

<table>
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<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-150-145</td>
<td>Network: Security Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>10-150-157</td>
<td>Network: UNIX/LINUX-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-150-163</td>
<td>Network: Structures 1</td>
<td>3</td>
</tr>
<tr>
<td>10-150-165</td>
<td>Network: MS Server/Networking</td>
<td>3</td>
</tr>
<tr>
<td>10-150-168</td>
<td>Network: Structures 2</td>
<td>3</td>
</tr>
<tr>
<td>10-150-174</td>
<td>Network: Client Operating Sys</td>
<td>3</td>
</tr>
<tr>
<td>Credits for Networking</td>
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<td></td>
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</tbody>
</table>

Web Database Integrator

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-154-124</td>
<td>Web: Connectivity</td>
<td>3</td>
</tr>
<tr>
<td>10-154-125</td>
<td>Web: Database Development</td>
<td>3</td>
</tr>
<tr>
<td>10-154-126</td>
<td>Web: Database Administration</td>
<td>3</td>
</tr>
<tr>
<td>10-154-127</td>
<td>Web: Application Security</td>
<td>3</td>
</tr>
<tr>
<td>10-154-128</td>
<td>Web: Server Side Script-Unix</td>
<td>3</td>
</tr>
<tr>
<td>10-154-129</td>
<td>Web: Server Side Scripting-MS</td>
<td>3</td>
</tr>
<tr>
<td>Credits for Web Database Integrator</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 68

Suggested Electives: Depends on track selection. Consult with a counselor for recommendations.

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.

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

10-104-112 E-COMMERCE IMPLEMENTATION PLAN ...implementation plan for a new E-Commerce initiative or E-Commerce business. Included is analyzing the market need, product development, operational planning; including outsourcing, competitive analysis, financial need forecasting, and risk assessment.

10-104-115 E-COMMERCE ONLINE STRATEGIES ...use of essential electronic information sources (library catalogs, business databases, government resources, CD-ROM, commercial databases, World Wide Web) useful to marketing and business decision-making.

10-104-116 E-COMMERCE DATABASE MARKETING ...applications of database marketing are identified and evaluated. Create relational database structures, utilize databases to initiate marketing programs, create valuable output, and process and analyze extracted data.

10-104-118 E-COMMERCE PRINCIPLES ...how the Internet and the Web dramatically impact consumers and organizations carry out the marketing function.

10-104-119 E-COMMERCE WEB MARKETING ...traditional and electronic direct marketing strategies; methods include search engine management, direct marketing planning, database marketing, catalogs, telemarketing services, print, radio, television and direct mailing.

Visit our website at: www.nwtc.edu
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.

10-107-194 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. (Prerequisite: 10-801-195, Communication-Written or equivalent)

10-107-195 MICRO TRAINING ...effective presentation skills, plan training content and delivery methods, write lesson plans, provide training materials, conduct training sessions, and assess learners’ grasp of stated objectives. (Prerequisites: 10-107-160, Micro Software-Intro OR 10-154-160, Micro Software-Intro) AND (10-107-162, Micro Hardware/Triblesh-Intro OR 10-154-150, Micro Hardware-Intro)

10-111-101 MACINTOSH-IMAGE EDITING ... (Adobe Photoshop + Adobe Acrobat); scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print or the internet. An introduction to manipulating bitmap images. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-104 PHOTOGRAPHY-DIGITAL ...visualizing images, camera operations, lenses, lighting, types of photography, traditional film, scanning pictures, capturing video, proofing, studio setup, photo shoots, digital darkrooms. You must have access to a digital camera.

10-111-105 DVD AUTHORING ... (DVD Studio Pro) ...setup and create interactive DVD productions. Other topics covered include: Bit-Budgeting, Storyboarding, Video and Audio Encoding, Menu Creation, and Delivery.

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. (Corequisite: 10-111-103, Graphic Workstations)

10-111-150 WEB GRAPHIC DESIGN ...prepare graphics for the web including optimization techniques, transparent gifs, background images, image maps, slices and rollovers. Code web pages using XHTML and CSS using table and frame page layouts. (Prerequisites: 10-111-101, Macintosh-Image Editing; 10-111-103, Graphic Workstations)

10-111-151 WEBSITE DESIGN ...(Adobe Go-Live) format text for websites, build HTML animation, internet based forms, cascading style sheets, CSS, web publishing, browser testing, and basic site management. (Prerequisites: 10-111-161, Macintosh Illustration and 10-111-150, Web Graphic Design; 10-111-103, Graphic Workstations)

10-111-152 WEB ANIMATION DESIGN ... (Macromedia Flash) vector animation, create, import source material, incorporate into Flash movies, use Stage and Timeline, motion, shape-tweening, add sound to buttons, use Action Script, and test flash. (Prerequisite: 10-111-161, Macintosh Illustration)

10-111-154 MACINTOSH-MULTIMEDIA AUTHORING ...media types including audio, video and graphics to create original commercial, educational and entertainment productions for delivery to broadcast, CD/DVD and web. Final Cut Pro, LiveType and Photoshop software. (Prerequisite: 10-111-101, Macintosh-Image Editing)

10-111-159 GRAPHIC WORKSTATIONS-ADVANCED ...operation, upgrading and maintaining systems used in graphic design and multimedia industries; OSX (Ten) operating system, directory structure, file management, application support; cross platform file usage and delivery. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images. (Corequisite: 10-111-103, Graphic Workstations)

10-111-172 WEB ANIMATION PROGRAMMING ...apply object-orientated programming concepts in ActionScript for motion, tweening, easing, coloring and shape drawing. Code scripts for time-based animations, event-based animations and dynamic animations. (Prerequisite: 10-111-152 Web Animation Design)

10-111-175 WEBSITE CODING ...write code for functionality and design of web page text, hyperlinks, images, forms, tables, and frames using (X)HTML, XML and CSS. Apply coding standards. Test browser function and user accessibility.

10-135-101 E-BUSINESS TECHNOLOGY FIELD STUDY ...alternative to the internship: in-depth study of a business(es) involved in design, development, and implementation of web technologies and internet-based business systems. Course should be taken during the last semester.

10-150-145 NETWORK: SECURITY FUNDAMENTALS ...network security fundamentals to include desktop and server systems.

10-150-157 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.

10-150-163 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.

10-150-165 NETWORK: MS SERVER/NETWORKING ...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.

10-150-168 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.

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

10-152-107 COMPUTER: JAVA-INTRODUCTION ...write object-oriented programs with graphical user interfaces in Java; Basics, Data and Information Processing, Object-Oriented Programming, Graphical User Interfaces and Event-Driven Programming, Graphics and Networking.
10-152-137 COMPUTER: APPLICATION DEVELOPMENT ...design/create a business application using a current programming language(s) that maximizes performance. A variety of methods and concepts may be explored and applied. May be client and/or server-side based. (Prerequisite: 10-154-159, Micro Scripting)

10-152-163 MICRO PROGRAMMING-VISUAL BASIC ...introduction to programming using the Visual Basic.NET programming language. Program definition and design, form design, and the coding, testing, and debugging of programs is covered. (Prerequisite: 10-154-159, Micro Scripting or experience using a programming language)

10-152-173 MICRO PROGRAMMING C++ ...C++ integrated development environment to construct programs, data types, control structures; library and user defined functions; disk I/O; and dynamic memory allocation.

10-152-175 COMPUTER: VISUAL BASIC-ADVANCED ...a survey of topics related to database access. Windows common controls, multiple document interface programming, Windows APIs, component-based applications, object-oriented programming, ActiveX controls, HTML Help, and program deployment and maintenance. (Prerequisite: A course in Visual Basic or any programming language that includes interactive programming and file processing)

10-154-124 WEB: CONNECTIVITY ...dynamic web sites, visual design, user interactivity, database components, SQL queries, administrator and developer roles, script interactivity between web pages and databases, networking concepts, tracking, security.

10-154-125 WEB: DATABASE DEVELOPMENT ...web database uses, analyzing information requirements, file organizations, data models, entity relationships, normalizing data, database management systems, development environments, web connectivity, creating tables, writing queries and file maintenance using SQL.

10-154-126 WEB: DATABASE ADMINISTRATION ...database administration in relation to web-based availability of data, including data dictionary creation; data warehousing; distributed databases; data modeling standards; data migration; disaster planning; records management, archival, destruction, capacity planning. (Prerequisite: 10-107-125, Web: Database Development OR 10-154-125, Web: Database Development)

10-154-127 WEB: APPLICATION SECURITY ...operating system installation, update, configuration for the web environment including: Apache configuration, SSL configuration, file encryption using PGP, digital certificates, secure sheet, and virtual private networks.

10-154-128 WEB: SERVER SIDE SCRIPTING-UNIX ...operating system installation, update, configuration for the web environment including: Apache configuration, PERL configuration, basic and intermediate HTML, basic and intermediate PERL, and manipulating ODBC compliant databases using PERL.

10-154-129 WEB: SERVER SIDE SCRIPTING-MICROSOFT ...operating system installation, update, configuration for the web environment including: IIS configuration, Active Server Page (ASP) configuration, basic and intermediate HTML, basic/intermediate ASP, manipulating ODBC compliant databases using ASP.

10-154-150 MICRO HARDWARE-INTRODUCTION ...computer/network terminology, component identification, POST, computer/peripheral/printer maintenance, system boards, memory, binary/hex systems, FAT vs NTFS, operating system/network installations/configurations, internet research, troubleshooting, command line.

10-154-152 MICRO OPERATING SYSTEMS ...explain the role of the microcomputer operating system, implement operating system communications and networking components, perform standard operating system maintenance, and recognize current server and infrastructure device operating systems. (Prerequisite: 10-107-162, Micro Hardware/Triblesht-Intro OR 10-154-150, Micro Hardware-Intro)

10-154-158 MICRO HARDWARE-ADVANCED ...advanced micro hardware and operating system configuration and maintenance; disk storage configuration; Windows registry, virus and component troubleshooting, diagnosis, upgrades and repair. (Prerequisites: 10-107-162, Micro Hardware/Triblesht-Intro OR 10-154-150, Micro Hardware-Intro AND 10-107-182, Micro Operating Systems OR 10-154-152, Micro Operating Systems)

10-154-159 MICRO SCRIPTING ...introduction to Windows scripting languages and programming techniques. Scripting methodologies will include Windows shell scripts, Windows Script Hosting using VBScript, and Windows Management Instrumentation (WMI).
Early Childhood Education

Associate Degree - Two Years, Offered online and accelerated

For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

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

Program Outcomes
• Apply child development theory to practice.
• Observe, record, and assess child growth and development.
• Implement developmentally appropriate curriculum.
• Incorporate developmentally appropriate guidance strategies.
• Integrate health, safety, and nutrition practices according to local, state, and national standards.
• Provide a respectful, diverse, and inclusive program.
• Use interpersonal skills to develop respectful relationships with children and adults.
• Demonstrate professional and ethical standards.
• Advocate for children, families, and the profession.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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.
• 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 Early Childhood Teacher in a group center, Family Childcare Provider—Teacher/Owner, Nanny, Head Start Teacher, Assistant Teacher at a Public/Private School, School Age Caregiver, Childcare Center Supervisor/Manager, Assistant Director of an Early Childhood Program, Early Childhood Program Director, Childcare 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.

Curriculum
The Early Childhood Education Association Degree is a two-year program. Upon graduation, a student will have completed 68 credits. Courses are offered online, accelerated, and hybrid, and may be taken in any order as long as prerequisites are met. Below is a suggested timeline.

First Semester
Catalog No. Description Credits
** 10-513-110 Basic Lab Skills 1
10-307-151 ECE: Infant/Toddler Develop 3
10-307-167 ECE: Health/Safety/Nutrition 3
** 10-307-174 ECE: Practicum 1 2
* 10-307-178 ECE: Art/Music/Language Arts 3
10-801-195 Written Communication 3
Semester Total 17

Second Semester
10-307-179 ECE: Child Development 3
10-307-188 ECE: Guiding Childrens Behav 3
** 10-307-192 ECE: Practicum 2 3
10-809-188 Developmental Psychology 3
10-809-196 Intro to Sociology 3
Semester Total 18

Third Semester
10-307-166 ECE: Curriculum Planning 3
10-307-187 ECE: Children w Differing Abil 3
10-307-195 ECE: Family/Comm Relationship 3
** 10-307-197 ECE: Practicum 3 3
10-804-106 Intro to College Math 3
10-809-172 Race Ethnic & Diversity 3
Semester Total 18

Fourth Semester
10-307-198 ECE: Admin Early Child Ed Prog 3
** 10-307-199 ECE: Practicum 4 3
10-801-198 Speech 3
10-809-195 Economics 3
Elective 3
Semester Total 15
Total Credits 68

Note
• A student who does not meet the requirements for program entry is required to consult an NWTC counselor about ways to make up any deficiencies through testing or coursework.
• 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 website: www.dhfs.state.wi.us
• It is necessary to show good health as evidenced by a medical examination within three months prior to beginning practicum class.

* Hybrid online class requires three Saturday visits to the Green Bay Campus unless other arrangements have been made.
** Requires student teaching in the community.

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.

10-307-148 ECE: FOUNDATIONS OF EARLY CHILDHOOD ... integrate strategies that support diversity and anti-bias perspectives; summarize early childhood education settings; identify components of a quality programs; summarize responsibilities of early childhood professionals; explore early childhood curriculum models.

10-307-151 ECE: INFANT/TODDLER DEVELOPMENT ...infant and toddler development in an early childhood education setting. Development of infants/toddlers; prenatal conditions and development; child development theories; heredity and the environment; culturally and developmentally appropriate environments.

10-307-166 ECE: CURRICULUM PLANNING ...curriculum planning in early childhood. Strategies that support diversity and anti-bias perspectives; critical role of play; developmentally appropriate environment; caregiving routines; promoting child development and learning; early childhood curriculum models. (Prerequisite: 10-307-178, ECE: Art, Music, Language Arts)

10-307-167 ECE: HEALTH/SAFETY/NUTRITION ...health, safety, and nutrition in early childhood settings. Anti-bias perspectives; governmental regulations and professional standards; safe, healthy, and nutritionally sound early childhood programs; child abuse/neglect mandates; SIDS risk reduction.

10-307-174 ECE: PRACTICUM 1 ...learn/practice skills in a child care setting. Includes documenting behavior, exploring diversity, implement activities developed by the cooperating teacher, practicing caregiving routines, and positive professional and interpersonal skills.

10-307-178 ECE: ART/MUSIC/LANGUAGE ARTS ...beginning curriculum development in art, music, and language arts. Role of play; developmentally appropriate environment; promote child development; caregiving routines as curriculum; language, literature, and literacy activities, art/music, movement activities.

10-307-179 ECE: CHILD DEVELOPMENT ...child development in the early childhood education setting. Social, cultural, and economic influences on child development; child development theories; development of children age three-eight; child development research; heredity and environment.

10-307-187 ECE: CHILDREN WITH DIFFERING ABILITIES ...differing abilities in early childhood settings. Anti-bias perspectives, inclusion, ADA/IDEA, typical and exceptional development; physical, cognitive, health/medical, communication, and/or behavioral/emotional disorders; community and professional resources; IEP/IFSP, adapt curriculum, cultivate partnerships.

10-307-188 ECE: GUIDING CHILDREN'S BEHAVIOR ...strategies to guide children’s behavior in the early childhood setting. Anti-bias perspectives, guidance principles, factors affecting behavior, guidance strategies, individual needs, guidance philosophy.

10-307-192 ECE: PRACTICUM 2 ...learn/practice skills in a child care setting. Growth/Development, support diversity, implement student developed activity plans, guidance strategies, professional behaviors, caregiving routines as curriculum, positive interpersonal skills with adults. (Prerequisite: 10-307-174, ECE: Practicum 1)

10-307-194 ECE: MATH/SCIENCE/SOCIAL STUDIES ...beginning curriculum development in math, science, social studies. Support diversity, role of play, developmentally appropriate environment, activity plans that promote learning, create appropriate math, science and social studies activities.

10-307-195 ECE: FAMILY/COMMUNITY RELATIONSHIPS ...relationships with family/community in early childhood. Diversity and anti-bias perspectives in families and community; family patterns, trends, relationships; communication strategies; relationships with families; advocate for children/families; community resources.

10-307-197 ECE: PRACTICUM 3 ...learn/practice skills in a child care setting. Assess growth/development; early childhood standards; curriculum; developmentally appropriate environment; guidance strategies; professional behaviors/practices; lead caregiving routines; interpersonal skills with children/adults. (Prerequisite: 10-307-192, ECE: Practicum 2)

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

10-307-199 ECE: PRACTICUM 4 ...learn/practice skills in a child care setting. Growth/development, assessment, anti-bias perspectives, professional behavior/practices; curriculum, relationships, evaluating programs for quality, professional options in early childhood. (Prerequisite: 10-307-197, ECE: Practicum 3)
Electrical Engineering Technology

Program Code 106621

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444. Visit the Electrical Engineering Technology website at: online.nwtc.edu/instructors/twmartin

Program Description
Electrical Engineering Technology prepares students to test, maintain, and troubleshoot electrical and electronic devices as found in machinery, computers, and communications. The program consists of two tracks: a transfer track, which includes calculus, for those students planning to transfer to a four year EET program, and a general track, for those students not planning to transfer. The EET transfer track graduate will be able to transfer to a four-year bachelor's degree program in Electrical Engineering Technology.

Program Outcomes
- 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.

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, Electrical/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

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- To complete the program in a minimum of two years, students must have satisfied or completed Intermediate Algebra with Applications, 10-804-118, before entering the first semester of the program. This is equivalent to two years of High School Algebra and one year of High School Geometry. Intermediate Algebra with Applications, 10-804-118, is a prerequisite for the first semester courses: DC 2: Circuits, 10-660-105; and Trigonometry with Applications, 10-804-196.
- Other beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

This program is fully eligible for financial aid.
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.

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

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

First Semester All Students Must Complete

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-605-161</td>
<td>Analog Comm 1: Noise Effects</td>
<td>1</td>
</tr>
<tr>
<td>10-605-162</td>
<td>Analog Comm 3: FM Systems</td>
<td>1</td>
</tr>
<tr>
<td>10-605-160</td>
<td>Linear Electronics 1: Drivers</td>
<td>1</td>
</tr>
<tr>
<td>10-605-164</td>
<td>Linear Electronics 3: Filters</td>
<td>1</td>
</tr>
<tr>
<td>10-605-165</td>
<td>Linear Electronics 2: Filters</td>
<td>1</td>
</tr>
<tr>
<td>10-605-163</td>
<td>Micro 5: Intermediate</td>
<td>1</td>
</tr>
<tr>
<td>10-605-166</td>
<td>Micro 4: Advanced Interfacing</td>
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General Track

Second Semester

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<tr>
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<th>Description</th>
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<tr>
<td>10-605-167</td>
<td>Micro 5: Intermediate</td>
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<tr>
<td>10-605-168</td>
<td>Micro 6: Advanced</td>
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<tr>
<td>10-605-169</td>
<td>Power Electronics 3: Drivers</td>
<td>1</td>
</tr>
<tr>
<td>10-605-170</td>
<td>Power Electronics 2: Motors</td>
<td>1</td>
</tr>
<tr>
<td>10-605-171</td>
<td>Power Electronics 1: Motors</td>
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Third Semester

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<td>10-605-172</td>
<td>Power Electronics 1: Drivers</td>
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<tr>
<td>10-605-173</td>
<td>Power Electronics 2: Motors</td>
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<tr>
<td>10-605-174</td>
<td>Power Electronics 3: Drivers</td>
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Fourth Semester

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<th>Description</th>
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<td>10-605-175</td>
<td>Power Electronics 1: Drivers</td>
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<tr>
<td>10-605-176</td>
<td>Power Electronics 2: Motors</td>
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Total Credits 16

Second Semester All Students Must Complete

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<th>Description</th>
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<tr>
<td>10-605-177</td>
<td>RLC Circuits</td>
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<tr>
<td>10-605-178</td>
<td>Radio Circuits</td>
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<tr>
<td>10-605-179</td>
<td>Radio Systems</td>
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Total Credits 15

Third Semester All Students Must Complete

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<th>Description</th>
<th>Credits</th>
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<td>10-605-180</td>
<td>Micro 6: Advanced</td>
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<tr>
<td>10-605-181</td>
<td>Power Electronics 3: Drivers</td>
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<tr>
<td>10-605-182</td>
<td>Power Electronics 2: Motors</td>
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<tr>
<td>10-605-183</td>
<td>Power Electronics 1: Motors</td>
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Total Credits 15

Fourth Semester All Students Must Complete

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<th>Description</th>
<th>Credits</th>
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<tbody>
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<td>10-605-184</td>
<td>Power Electronics 1: Drivers</td>
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<tr>
<td>10-605-185</td>
<td>Power Electronics 2: Motors</td>
<td>1</td>
</tr>
<tr>
<td>10-605-186</td>
<td>Power Electronics 3: Drivers</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits 15

Suggested Electives:
- Machine Tool Processes 1, 10-420-171
- Machine Tool Processes 2, 10-420-172
- Machine Fabrication 1, 10-442-150
- Machine Fabrication 2, 10-442-151
- Mechanics 2: Intermediate, 10-620-122
- Mechanics 3: Systems, 10-620-123
- Fluids 3: Intermediate Hy, 10-620-165
- Fluids 4: Advanced Hydraul, 10-620-166
- Rigging Systems 1, 10-620-105
- Rigging Systems 2, 10-620-106

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

10-605-160 LINEAR ELECTRONICS 1: BJT AMPLIFIERS...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers.

10-605-162 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS...review the characteristics of the passive RL, RC, RLC active filters, introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-163 MICROPROCESSORS 1: INTRODUCTION...review of number, use of simulation software, fetch and execute, and fundamentals of assembly language programming.

10-605-162 MICROPROCESSORS 2: TECHNIQUE...complex addressing modes, fields in programming, pseudo-ops, programming technique, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-166 MICROPROCESSORS 4: ADVANCED INTERFACING...writing rituals for switches, LEDs, LCDs, ADCs, keypads, stepper motors, DC motors, and infrared LEDs and the continued use of simulation software. (Prerequisite: 10-605-165, Micro 3: Interfaces)

10-605-167 MICROPROCESSORS 5: INTERMEDIATE...designing and writing intermediate level programs in assembly language. The study will include the use of simulation software. (Prerequisite: 10-605-166, Micro 4: Advanced Interfacing)

10-605-168 MICROPROCESSORS 6: ADVANCED...designing and write assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

Visit our website at: www.nwtc.edu
10-605-170 DATACOMM 1: INTRODUCTION
...introduction to pulse amplitude modulation, pulse amplitude modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-660-103, Digital 3: Registers)

10-605-171 DATACOMM 2: PULSE CODE MODULATION ...introduction to pulse code modulation, pulse code modulation principles, sampling and signal reconstruction, analog to digital conversion, and digital to analog conversion. (Prerequisite: 10-605-170, Data Comm 1: Introduction)

10-605-172 DATACOMM 3: DELTA MODULATION ...introduction to delta modulation, delta modulation principles, sampling and signal reconstruction, and two-channel time division multiplexing. (Prerequisite: 10-605-171, Data Comm 2: Pulse Code)

10-605-180 ANALOG COMMUNICATIONS 1: NOISE EFFECTS ...characteristics of noise in communications systems and analyze amplitude modulation.

10-605-181 ANALOG COMMUNICATIONS 2: AM/SSB ...characteristics of single sideband transmission and receiving systems. (Prerequisite: 10-605-180, Analog Comm 1: Noise Effects)

10-605-182 ANALOG COMMUNICATIONS 3: FM SYSTEMS ...characteristics of frequency modulation transmission and receiving systems. (Prerequisite: 10-605-181, Analog Comm 2: AM/SSB)

10-620-140 MACHINE WIRING ...introduction to machine wiring, including basic documentation, labeling and wiring practices.

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of an industrial AC drives to AC motors. (Prerequisites: 10-605-158, Power Electronics 2: Drives; 10-620-162, Power Electricity 2: Motors)

10-620-161 POWER ELECTRICITY 1: MOTORS ...causes and results of magnetism and magnetic fields, laws of magnetic/electric interactions, DC machine and dynamo configuration, Shunt, S.E. Shunt, and PM DC machine performance and characteristics. (Prerequisite: 10-660-109, AC 3: RLC Circuits)

10-620-162 POWER ELECTRICITY 2: MOTORS ...series DC, Compound DC, AC Induction, and Specialty machine performance and characteristics, and three-phase power systems. (Prerequisite: 10-620-161, Power Electricity 1: Motors)

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

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1 Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, Current, Resistance, Ohm’s Law, Power and Kirchhoff’s Voltage Law are defined.


10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Prerequisite: 10-660-105, DC 2: Circuits)

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

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

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Prerequisite: 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. (Prerequisite: 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. (Prerequisite: 10-660-113, Digital 4: ALU)
Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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. (Prerequisite: 10-660-114, Digital 5: Characteristics)

10-662-112 DC/AC 3 ...apply Thevenins and Nortons Theorems in practical problems involving complex AC circuits. Solve complex AC circuits using Mesh and Nodal techniques and describe power flow in complex AC circuits. (Prerequisite: 10-660-109, AC 3: RLC Circuits)

10-662-124 ELECTRONIC CIRCUIT ANALYSIS...
...develop equations for and analyze transistor amplifier circuits for bias, small signal gain, and transfer function including frequency response using Bode plot graphs of first order functions. (Prerequisite: 10-605-136, Electronics-Linear)

10-804-181 CALCULUS 2 ...continuation Calculus I. Topics: integration techniques, indeterminate forms, improper integrals, techniques of integration, applications to the physical sciences, first order linear differential equations, Infinite series including Maclaurin, Taylor, and Fourier.

10-806-150 PHYSICS 1-TECHNICAL
...measurement, motion, force, work, power, and energy; impulse and momentum; vectors and vector analysis; rotational mechanics; and rotational motion. (Prerequisite: 10-804-130, Algebra/Trigonometry)
### Curriculum

The Electrical Power Distribution Technical Diploma is a one-year, three-semester program. Upon graduation, a student will have completed 33 credits.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
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<tr>
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<td>Description</td>
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<td>Line Elec Field Trng 1</td>
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<td>31-413-353</td>
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<tr>
<td>31-413-362</td>
<td>Line Elec-Safety 1</td>
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<td>10-103-121</td>
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<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
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<tr>
<td>31-413-361</td>
<td>Lineman-Safety/First Aid</td>
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<tr>
<td>31-801-386</td>
<td>Communicating Effectively</td>
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<td><strong>Total Credits</strong></td>
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This program is fully eligible for financial aid.

### Employment Potential

A graduate of the program will have the potential for employment as a Line Technician, Lead Line Technician, Line Technician Supervisor, Cable TV Line Technician, Telephone Line Technician, Technician in an Electricity Generating Plant, or Installer/Maintainer of Underground Systems. Graduates in those jobs will perform construction, operations, and maintenance work on the electric power system and equipment.

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

- Line Coordinator
- Line Apprentice
- Safety Advisor
- Distribution Construction Designer
- Distribution Dispatcher
- Substation Electrician

### Program Description

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

### Program Outcomes

- Assist in the construction of electric transmission systems.
- Opportunity to secure a (CDL) commercial driver's license.
- Relate electrical theory to electric power systems.
- Work comfortably at heights.
- Climb poles and towers.
- Be knowledgeable in personal protective equipment to safely perform specific work.
- Identify sub-station components.
- Install underground electric systems.
- Operate electrical power distribution equipment.
- Troubleshoot power distribution and transmission systems.
- Communicate technical information.
- Assist in the construction of power distribution systems.
- Identify methods of electrical generation.

### Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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. Students should have mastered basic math skills. For a description of Basic Math, see the Basic Education section of catalog.
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 ...electron theory, electromotive force sources, voltage, current, resistance, power, ohm's law, series-parallel circuits and test equipment. (Corequisite: 31-804-311, Algebra-Electricity)

31-413-316 RESIDENTIAL ELECTRICAL CODE 1 ...National Electrical Code, residential circuits, conductor sizes, branch circuits, box fill calculations, switch control, branch circuit overcurrent protection and calculations, and ground fault circuit interrupters.

31-413-319 RESIDENTIAL WIRING 1 ...residential electrical installation, national electrical code applications, residential circuits, box selection, conductor selector, receptacles, GFCI protection and switch control. (Corequisite: 31-413-316, Residential Elec Code 1)

31-413-326 RESIDENTIAL ELECTRICAL CODE 2 ...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 31-413-316, Residential Electrical Code 1)

31-413-327 COMMERCIAL WIRING TECHNIQUES ...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low voltage wiring. (Corequisite: 31-413-346, Commercial Electrical Code)

31-413-328 MOTORS/TRANSFORMERS ...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Prerequisite: 31-413-334, AC Circuits)

31-413-329 RESIDENTIAL WIRING 2 ...residential circuit installations, National Electrical Code, application of residential design and layout, small appliance circuits and special purpose outlets. (Co-requisites: 31-413-319, Residential Wiring 1; 31-413-326 Residential Electrical Code 2)

31-413-334 AC CIRCUITS ...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, Diodes and silicon controlled rectifiers. (Corequisites: 31-413-314, DC circuits; 31-804-311, Algebra Electricity)

31-413-339 INDUSTRIAL CONTROLS ...electrical symbols, wiring diagrams, ladder diagrams, control logic, pilot devices, solenoids, relays, and time delay control. (Corequisite: 31-413-328, Motors and Transformers)

31-413-345 INDUSTRIAL CODE ...three-phase and single phase systems, motor branch circuits, overcurrent and overload protections, power factor, hazardous locations, harmonics and National Electric Code. (Corequisite: 31-413-346, Commercial Elec Code; 31-413-349, Electric Motor Control)

31-413-346 COMMERCIAL ELECTRICAL CODE ...commercial building plans and specifications, computing electrical loads and branch circuits, emergency systems, raceways, conduit fill, power and lighting circuits, motor & appliance circuits. (Prerequisite: 31-413-326, Residential Electrical Code 2)

31-413-349 ELECTRIC MOTOR CONTROL ...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC’s. (Pre-requisite: 31-413-339, Industrial Controls)

31-449-301 ELECTRICAL SAFETY ...standard first aid, CPR and OSHA 10 hour course as it relates to the electrical field.
Program Description
Electricity prepares students to install, maintain, and service basic electrical equipment used in residential, commercial, and industrial settings.

Program Outcomes
• Perform safe work practices.
• Apply National and Wisconsin State Electrical Codes to electrical installations.
• Install, maintain, and troubleshoot residential, commercial, and industrial electrical systems.
• Perform diagnostic testing on electrical systems.
• Apply basic calculations to electrical systems and installations.
• Demonstrate the operation of AC and DC motors.
• Install and troubleshoot basic motor control systems.
• Interpret electrical diagrams.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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.
• Students should have mastered high school algebra skills and have a desire to learn advanced algebra and trigonometry. 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 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

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

First Semester
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<th>Description</th>
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<td>31-413-314</td>
<td>DC Circuits</td>
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<tr>
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<td>Residential Elec Code 1</td>
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<td>Residential Wiring 1</td>
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<td>31-413-326</td>
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<td>31-413-329</td>
<td>Residential Wiring 2</td>
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<td>31-413-334</td>
<td>AC Circuits</td>
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<tr>
<td>31-449-301</td>
<td>Electrical Safety</td>
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<tr>
<td>31-804-312</td>
<td>Math-Algebra/Trades</td>
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<td><strong>Semester Total</strong></td>
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Second Semester
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<th>Catalog No</th>
<th>Description</th>
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<tr>
<td>31-413-327</td>
<td>Commercial Wiring Techniques</td>
<td>2</td>
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<tr>
<td>31-413-328</td>
<td>Motors/Transformers</td>
<td>2</td>
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<tr>
<td>31-413-339</td>
<td>Industrial Controls</td>
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<tr>
<td>31-413-345</td>
<td>Industrial Code</td>
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<td>31-413-346</td>
<td>Commercial Elec Code</td>
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<td>31-413-349</td>
<td>Electric Motor Control</td>
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<td>31-413-359</td>
<td>Electrical Internship</td>
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<td>31-801-385</td>
<td>Communicating-Writing</td>
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<tr>
<td>31-801-386</td>
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<tr>
<td><strong>Total Credits</strong></td>
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</table>

This program is fully eligible for financial aid.
Please Note
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31-413-319 RESIDENTIAL WIRING 1...residential electrical installation, national electrical code applications, residential circuits, box selection, conductor selector, receptacles, GFCI protection and switch control. (Corequisite: 31-413-316, Residential Elec Code 1)

31-413-326 RESIDENTIAL ELECTRICAL CODE 2...National Electrical Code, residential circuit layout and design, small appliance circuits, special purpose outlets, service entrance equipment, calculations and demand factors. (Corequisite: 31-413-316, Residential Electrical Code 1)

31-413-327 COMMERCIAL WIRING TECHNIQUES...raceways and fittings, conduit bending, wire pulling methods, fastening systems, lighting and low voltage wiring. (Corequisite: 31-413-346, Commercial Electrical Code)

31-413-328 MOTORS/TRANSFORMERS...magnetism, electromagnetism, transformers, DC generators and motors, AC single-phase and three-phase motors, and an introduction to AC drives. (Prerequisite: 31-413-334, AC Circuits)

31-413-329 RESIDENTIAL WIRING 2...residential circuit installations, National Electrical Code, application of residential design and layout, small appliance circuits and special purpose outlets. (Co-requisites: 31-413-319, Residential Wiring 1; 31-413-326 Residential Electrical Code 2)

31-413-334 AC CIRCUITS...AC theory, inductance, capacitance, impedance, series ad parallel AC circuits, AC power, power factor corrections, rectification of AC, Diodes and silicon controlled rectifiers. (Corequisites: 31-413-314, DC circuits; 31-804-311, Algebra Electricity)

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31-413-345 INDUSTRIAL CODE...three-phase and single phase systems, motor branch circuits, overcurrent and overload protections, power factor, hazardous locations, harmonics and National Electric Code. (Corequisites: 31-413-346, Commercial Elec Code; 31-413-349, Electric Motor Control)

31-413-346 COMMERCIAL ELECTRICAL CODE...commercial building plans and specifications, computing electrical loads and branch circuits, emergency systems, raceways, conduit fill, power and lighting circuits, motor & appliance circuits. (Prerequisite: 31-413-326, Residential Electrical Code 2)

31-413-349 ELECTRIC MOTOR CONTROL...motor starters, overcurrent protection, overload protection, motor branch circuits, starting methods, troubleshooting motor circuits, and an introduction to PLC's. (Prerequisite: 31-413-339, Industrial Controls)

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

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Electro-Mechanical Technology prepares students for employment as plant-floor and field service technicians who assemble, install, troubleshoot, repair, and modify mechanical, electrical, and programmable controllers found on industrial machinery.

Program Outcomes
- Understand and apply knowledge of electricity, electronics, hydraulics, and electric motors and mechanics.
- Read technical drawings, schematics, and diagrams.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Perform electrical, mechanical, and fluid measurements by properly selecting tools and test equipment.
- Perform electrical/mechanical assembly/disassembly, repair, or calibrate components by properly selecting tools and equipment and following procedures.
- Understand the overall operation and control of machines.
- Understand the basic fastening skills related to machine fabrication and assembly requirements.
- Apply electrical skills to troubleshoot control and operator panels.
- Apply programming languages to the control of single programmable controllers and industrial networks.
- Apply critical thinking skills to solving problems.
- Effectively communicate and perform in a team environment.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- To complete the program in a minimum of two years, students must have satisfied or completed Intermediate Algebra with Applications, 10-804-118, before entering the first semester of the program. This is equivalent to two years of High School Algebra and one year of High School Geometry. Intermediate Algebra with Applications, 10-804-118, is a prerequisite for the first semester course: DC 2: Circuits, 10-660-105; and Trigonometry with Applications, 10-804-196.
- Other beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Employment Potential
A graduate of 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 servohydraulics equipment, programmable controllers, motors controllers, and robotic equipment.

Electro-Mechanical Technician: maintains and repairs electro-mechanical equipment including drive systems, position sensors, cables, 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 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

Suggested Electives:
- Manufacturing Practices, 10-623-107
- Automation 7: PLC, 10-664-150
- Automation 8: HMI, 10-664-151
- Automation 9: HMI, 10-664-152
- Automation 10: Networks, 10-664-153
- Automation 11: Networks, 10-664-154
- Automation 12: Advanced, 10-664-155
- Control 1: Transducers, 10-664-160
- Control 2: Fundamentals, 10-664-161
- Control 3: Process System, 10-664-162
- Control 4: Drive Performa, 10-664-163
- Control 5: Servo Systems, 10-664-164
- Control 6: Servo systems, 10-664-165

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

First Semester
- Catalog No. 10-620-100 Fluids 1: Basic Pneumatics 1
- 10-620-101 Fluids 2: Basic Hydraulics 1
- 10-620-121 Mechanics 1: Basic 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
- 10-664-100 Automation 1: Control Logic 1
- 10-664-101 Automation 2: Motor Control 1
- 10-804-196 Trigonometry w Apps 3
- 10-809-195 Intro to Psychology 3
- Semester Total 16

Second Semester
- 10-620-110 Electromech Fundamentals 1 1
- 10-620-111 Electromech Fundamentals 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: Trans-Basic 1
- 10-660-112 Electronics 3: Op-Amps-Basic 1
- 10-664-102 Automation 3: PLC 1
- 10-664-103 Automation 4: PLC 1
- 10-664-104 Automation 5: PLC 1
- 10-664-105 Automation 6: PLC 1
- 10-804-195 College Algebra w Apps 3
- 10-809-172 Ethnic & Diversity 3
- Semester Total 18

Third Semester
- 10-420-171 Machine Tool Processes 1 1
- 10-442-150 Machine Fabrication 1 1
- 10-605-157 Power Electronics 1: Devices 1
- 10-605-158 Power Electronics 2: Drives 1
- 10-620-159 Power Electronics 3: Drives 1
- 10-620-122 Mechanics 2: Intermediate 1
- 10-620-123 Mechanics 3: Systems 1
- 10-620-140 Machine Wiring 1
- 10-620-150 Industrial Enclosures 1
- 10-620-161 Power Electricity 1: Motors 1
- 10-620-162 Power Electricity 2: Motors 1
- 10-620-165 Fluids 3: Inter Hydraulics 1
- 10-620-166 Fluids 4: Advanced Hydraulics 1
- 10-801-195 Written Communication 3
- Semester Total 16

Fourth Semester
- 10-420-172 Machine Tool Processes 2 1
- 10-442-151 Machine Fabrication 2 1
- 10-620-105 Rigging Systems 1 1
- 10-620-106 Rigging Systems 2 1
- 10-620-189 Machine Integrated Techniques 3
- 10-801-197 Technical Reporting 3
- 10-809-195 Economics 3
- Elective 3
- Semester Total 16
- Total Credits 66

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.

10-420-171 MACHINE TOOL PROCESSES 1 ...semi-precision and precision measurement, vertical and horizontal saws, principles of drilling and drilling machines.

10-420-172 MACHINE TOOL PROCESSES 2 ...engine lathes and engine lathe operations, milling machines and milling operations, grading and finishing. (Prerequisite: 10-420-171, Machine Tool Processes 1)

10-442-150 MACHINE FABRICATION 1 ...a study of joining processes including welding, brazing, soldering, mechanical fasteners and adhesives.

10-442-151 MACHINE FABRICATION 2 ...a study of fabrication processes including shears, saws, rolls, braces and benders. (Corequisite: 10-442-150, Machine Fabrication 1)

10-605-157 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisite: 10-660-109, AC 3: RLC Circuits; 10-660-112, Basic Electronics 3: Op-Amps)

10-605-158 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Prerequisite: 10-605-157, Power Electronics 1: Devices)

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

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

10-620-105 RIGGING SYSTEMS 1 ...the basic skills of rigging, employment of hoists, slings, lifts, wire rope, and chain slings as part of rigging system. (Prerequisite: 10-620-111, Electromechanical Fundamentals 2)

10-620-106 RIGGING SYSTEMS 2 ... fiber rope, industrial cranages, wire mesh slings, synthetic slings as part of rigging system including applying equipment movement devices such as jacks, roller bars, dolls, and knots as part of a rigging system. (Prerequisite: 10-620-105, Rigging Systems 1)

10-620-110 ELECTROMECHANICAL FUNDAMENTALS 1 ...fundamentals of mechanics and mechanical systems including linear motion, linear forces, torque, and equilibrium leading to an understanding of work, energy, and power in mechanical systems. (Prerequisite: 10-804-196 Trigonometry w Apps)

10-620-111 ELECTROMECHANICAL FUNDAMENTALS 2 ...mechanics and mechanical systems by investigating momentum, rotational motion, work, energy, and power in mechanical systems culminating in an understanding of simple machines. (Prerequisite: 10-620-110, Electromechanical Fundamentals 1)

10-620-121 MECHANICS 1: BASIC ...mechanical drive system components related to V-Belt drives, chain drives, and gear drives.

10-620-122 MECHANICS 2: INTERMEDIATE ...mechanical drive system components related to multiple shaft drives, heavy-duty V-Belt Drives, synchronous belt drives, lubrication, and alignment.

10-620-123 MECHANICS 3: SYSTEMS ...application of correct couplings to mechanical systems, Heavy-duty Chain Drives, Maintenance of Brakes and Clutches, selection of brake/clutch mechanisms, and specification of linear ball bushings and ball screw drives. (Prerequisite: 10-620-122, Mechanics 2: Intermediate)

10-620-140 MACHINE WIRING ... introduction to machine wiring, including basic documentation, labeling and wiring practices. (Prerequisite: 10-620-120, Machine Wiring 1; 10-664-101, Automation 2: Motor Control)

10-620-159 POWER ELECTRONICS 3: DRIVES ...power circuitry of AC drives and application of an industrial AC drives to AC motors. (Prerequisites: 10-605-158, Power Electronics 2: Drives; 10-620-162, Power Electronics 2: Motors)

10-620-161 POWER ELECTRICITY 1: MACHINES ...causes and results of magnetism and magnetic fields, laws of magnetic/ electric interactions, DC machine and dynamo configuration, Shunt, S.E. Shunt, and PM DC machine performance and characteristics. (Prerequisite: 10-660-109, AC 3: RLC Circuits)

10-620-162 POWER ELECTRICITY 2: MACHINES ...series DC, Compound DC, AC Induction, and Specialty machine performance and characteristics, and three-phase power systems. (Prerequisite: 10-620-161, Power Electricity 1: Motors)

10-620-165 FLUIDS 3: INTERMEDIATE HYDRAULICS ... design of cylinder actuating circuits with pressure-compensated flow control valves, how to control pressure, pilot-operated check valve applications, accumulator operation and application, hydraulic motor types and applications. (Prerequisite: 10-620-101, Fluids 2: Basic Hydraulics)

10-620-166 FLUIDS 4: ADVANCED HYDRAULICS ...components of hydraulic pump power, characteristics of fluid conductors, issues of hydraulic system maintenance, basics of hydraulic flow and pressure in pipelines, design a hydraulic system from a specification. (Prerequisite: 10-620-165, Fluids 3: Intermediate Hydraulics)

10-620-189 MACHINE INTEGRATION TECHNIQUES ...application of machine fabrication techniques, automation products to manufacturing processes including PLC, Drives, Motors (Electric and Hydraulics), Sensors. (Prerequisite: Completion of 3rd semester coursework; Corequisites: 10-442-151, Machine Fabrication 2; 10-620-150, Industrial Enclosures 1; 10-420-172, Machine Tool Processes 2)

10-660-101 DIGITAL 1: LOGIC ...AND, OR, NOT, NAND, NOR, logic operation using switch logic, ladder logic, and gate logic. Simulation methods using Boolean theorems and Karnaugh Maps, and timing diagram analysis. (Prerequisite: 10-660-100, Digital 1 Logic)

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1 Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

10-660-104 DC 1: INTRODUCTION ...introduction to the concepts of DC electricity and simple series circuits. Voltage, Current, Resistance, Ohm’s Law, Power and Kirchhoff’s Voltage Law are defined.


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: 10-660-105, DC 2: Circuits; Corequisite: 10-804-196, Trigonometry w Apps.)

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

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on reactive and resistive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuits. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Prerequisite: 10-660-110, Electronics 1: Diodes-Basic)

10-660-112 ELECTRONICS 3: OPERATIONAL 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. (Prerequisite: 10-660-111, Electronics 2: Transistor-Basic)

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

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

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

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

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

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

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The Electronics/Biomedical Technology program offers students the option between tracks specializing in biomedical or general electronics. The biomedical track prepares the student for an entry-level position as a technician for hospitals or medical equipment manufacturers. The general electronics track prepares the student to operate, test, maintain, and troubleshoot electronic equipment and work with research and design engineers.

Program Outcomes
• Describe the various digital modulation techniques.
• Identify components of power switching devices and circuits.
• Evaluate power switching circuits.
• Program microprocessor interface circuits.
• Analyze and troubleshoot biomedical electronics equipment (Biomedical track specific).
• 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 Academic Skills Assessment section of this catalog for more information.
• To complete the program in a minimum of two years, students must have satisfied or completed Intermediate Algebra with Applications, 10-804-118, before entering the first semester of the program. This is equivalent to two years of High School Algebra and one year of High School Geometry. Intermediate Algebra with Applications, 10-804-118, is a prerequisite for the first semester course: DC 2: Circuits, 10-660-105; and Trigonometry with Applications, 10-804-196.
• Other beginning courses require mastery of algebra skills. For a description of algebra skills, see the Basic Education section of this catalog.

Program Code 106051

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, Field Service Technician and Biomedical Equipment 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.

Biomedical Equipment Technician, also called Biomedical Engineering Technicians or BMETs: construct, test, repair, and maintain electromedical equipment of all sorts, including electrosurgical equipment, cardiovascular equipment, kidney dialysis machines, respirators, vital signs data equipment, telemetry transmitters and receivers, radiology equipment and nuclear medicine equipment.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Computer Field Service Supervisor
• Electronics Production Superintendent
• Electronics Maintenance Supervisor
Curriculum
The Electronics/Biomedical Technology Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 66 credits.

First Semester All Students Must Complete

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<tr>
<td>10-660-100</td>
<td>Electronics - Introduction to</td>
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<tr>
<td>10-660-101</td>
<td>Digital 1: Logic</td>
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<tr>
<td>10-660-102</td>
<td>Digital 2: Sequential</td>
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<tr>
<td>10-660-103</td>
<td>Digital 3: Registers</td>
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<tr>
<td>10-660-104</td>
<td>DC 1: Introduction</td>
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<tr>
<td>10-660-105</td>
<td>DC 2: Circuits</td>
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<td>10-660-106</td>
<td>DC 3: Circuit Theorems</td>
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<tr>
<td>10-804-196</td>
<td>Trigonometry w Apps</td>
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<td>10-809-198</td>
<td>Intro to Psychology</td>
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Second Semester All Students Must Complete

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<td>10-660-108</td>
<td>AC 2: Reactance</td>
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<td>10-660-109</td>
<td>AC 3: RLC Circuits</td>
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<tr>
<td>10-660-110</td>
<td>Electronics 1: Diodes-Basic</td>
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<tr>
<td>10-660-111</td>
<td>Electronics 2: Trans-Basic</td>
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<td>Digital 4: ALU</td>
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<td>10-660-114</td>
<td>Digital 5: Characteristics</td>
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<td>Linear Electronics 1: BJT Amps</td>
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<td>10-605-161</td>
<td>Linear Electronics 2: FET Amps</td>
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<td>10-605-162</td>
<td>Linear Electronics 3: Filters</td>
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<td>10-605-163</td>
<td>Micro 1: Introduction</td>
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<td>Micro 2: Technique</td>
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<td>10-605-165</td>
<td>Micro 3: Interfaces</td>
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<td>10-605-170</td>
<td>Datacomm 1: Introduction</td>
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<td>10-605-171</td>
<td>Datacomm 2: Pulse Code Mod</td>
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<td>Datacomm 3: Delta Modulation</td>
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<td>10-801-195</td>
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<td>Micro 4: Advanced Interfacing</td>
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<tr>
<td>10-605-167</td>
<td>Micro 5: Intermediate</td>
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<tr>
<td>10-605-168</td>
<td>Micro 6: Advanced</td>
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<tr>
<td>10-605-174</td>
<td>Datacomm 5: Fiber Optics-Intro</td>
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<tr>
<td>10-605-175</td>
<td>Datacomm 6: Fiber Optics-Adv</td>
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<tr>
<td>10-605-180</td>
<td>Analog Comm 1: Noise Effects</td>
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<tr>
<td>10-605-181</td>
<td>Analog Comm 2: AM/SSB</td>
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<td>Analog Comm 3: FM Systems</td>
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<td>10-809-195</td>
<td>Economics</td>
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Electronics Technology

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<tr>
<td>10-620-140</td>
<td>Machine Wiring</td>
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<td>10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
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Biomedical Technology

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<tr>
<td>10-806-134</td>
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Second Semester

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<td>10-501-101</td>
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Third Semester

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<td>10-806-177</td>
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Fourth Semester

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<td>10-605-106</td>
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<td>10-605-107</td>
<td>Biomed Electronics 2</td>
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<td>10-605-108</td>
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<td>10-605-109</td>
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Suggested Electives:
- Manufacturing Practices, 10-623-107
- Automation 7: PLC, 10-664-150
- Automation 8: HMI, 10-664-151
- Automation 9: HMI, 10-664-152
- Automation 10: Networks, 10-664-153
- Automation 11: Networks, 10-664-154
- Automation 12: Advanced, 10-664-155
- Control 1: Transducers, 10-664-160
- Control 2: Fundamentals, 10-664-161
- Control 3: Process System, 10-664-162
- Control 4: Drive Performa, 10-664-163
- Control 5: Servo Systems, 10-664-164
- Control 6: Servo systems, 10-664-165

This program is fully eligible for financial aid.

Descriptions for Electronics/Biomedical Technology are on next page...
Course Descriptions

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

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-605-106 BIOMETRICS 1: SIGNALING ...the study will present the characteristics of biomedical electronics signaling and provide a survey of biomedical electronics signaling systems. (Prerequisite: 10-605-162, Linear Electronics 3; Filters; 10-605-172, Datacomm 3: Pulse Code)

10-605-107 BIOMETRICS 2: INSTRUMENTATION ...study will present the characteristics of biomedical electronics instrumentation and provide a survey of biomedical electronics instrumentation. (Prerequisite: 10-605-106, Biomed Electronics 1)

10-605-108 BIOMETRICS 3: NETWORKING ... study will present the characteristics of biomedical electronics networking and provide a survey of biomedical electronics networking systems. (Prerequisite: 10-605-107, Biomed Electronics 2)

10-605-109 BIOMETRICS 4: CALIBRATION ...study will present the characteristics of biomedical electronics calibration and provide a survey of biomedical electronics calibration. (Prerequisite: 10-605-108, Biomed Electronics 3)

10-605-117 POWER ELECTRONICS 1: DEVICES ...the device characteristics and applications of thyristors, power transistors, and switching devices. (Prerequisites: 10-660-109, AC 3 RLC Circuits; 10-660-112, Basic Electronics 3: Op-Amps)

10-605-118 POWER ELECTRONICS 2: DRIVES ...power circuitry of AC and DC drives and basic setup and application of an industrial DC and AC drives to DC and AC motors. (Prerequisite: 10-605-157, Power Electronics 1: Devices)

10-605-119 POWER ELECTRONICS 3: SWITCHING POWER SUPPLIES ...characteristics of switching power supply systems. (Prerequisite: 10-605-158, Power Electronics 2: Circuits)

10-605-116 LINEAR ELECTRONICS 1: BJTs ...review the characteristics of the bipolar junction transistor and Class A, Class AB and Class B bipolar junction transistor amplifiers.

10-605-117 LINEAR ELECTRONICS 2: JFETs ...characteristics of the junction field-effect (JFET) transistor amplifier and types of commonly used field effect transistor amplifiers. (Prerequisite: 10-605-160, Linear Electronics 1)

10-605-118 LINEAR ELECTRONICS 3: PASSIVE/ACTIVE FILTERS ... review the characteristics of the passive RL, RC, RLC active filters, introduction to all types of commonly used passive and active filters. (Prerequisite: 10-605-161, Linear Electronics 2: JFET Amps)

10-605-119 LINEAR ELECTRONICS 4: MICROPOTENTIALS 1: INTRODUCTION ... review of number, use of simulation software, fetch and execute, and fundamentals of assembly language programming.

10-605-120 MICROPROCESSORS 1: TECHNIQUE ... complex addressing modes, fields in programming, pseudo-ops, programming technique, and continued use of simulation software. (Prerequisite: 10-605-163, Micro 1: Intro)

10-605-121 MICROPROCESSORS 2: TECHNIQUE ... operating a SCI, ADC, Timer and SPI, and continued use of simulation software. (Prerequisite: 10-605-164, Micro 2: Technique)

10-605-122 MICROPROCESSORS 3: INTERFACES ...basic assembly language programming for operating a SCI, ADC, Timer and SPI, and continued use of simulation software. (Prerequisite: 10-605-165, Micro 3: Interfaces)

10-605-123 MICROPROCESSORS 4: ADVANCED INTERFACING ... writing rituals for switches, LEDs, LCDs, ADCs, keypads, stepper motors, DC motors, and infrared LEDs and the continued use of simulation software. (Prerequisite: 10-605-166, Micro 3: Interfaces)

10-605-124 MICROPROCESSORS 5: INTERMEDIATE ... designing and writing intermediate level programs in assembly language. The study will include the use of simulation software. (Prerequisite: 10-605-166, Micro 4: Advanced Interfacing)

10-605-125 MICROPROCESSORS 6: ADVANCED ... designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

10-605-130 MICROPROCESSORS 7: ADVANCED ... designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)

10-605-140 MICROPROCESSORS 8: ADVANCED ... designing and writing assembly language programs that implement Finite State Machines, interrupts, divide routines, and the continued use of simulation software. (Prerequisite: 10-605-167, Micro 5: Intermediate)
10-620-140 MACHINE WIRING ...introduction to machine wiring, including basic documentation, labeling and wiring practices.

10-660-100 INTRODUCTION TO ELECTRONICS ...will present general background of electronics and provide a survey of electronics specializations.

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

10-660-102 DIGITAL 2: SEQUENTIAL ...operation and connection of Latches, RS flip-flops, JK flip-flops, and D flip-flops using timing diagram analysis, and some simple applications are studied. (Prerequisite: 10-660-101, Digital 1 Logic)

10-660-103 DIGITAL 3: REGISTERS ...analyze and design asynchronous up counters, down counters, presettable counters, ring counters, and Johnson counters, and analyze synchronous counters. Analyze and design various types of shift registers. (Prerequisite: 10-660-102, Digital 2: Sequential)

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


10-660-106 DC 3: CIRCUIT THEOREMS ...analysis of circuits using various advanced methods. Branch, loop and node methods are studied. Eight network theorems are presented for the solution of circuit voltages and circuits. (Prerequisite: 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: 10-660-105, DC 2-Circuits; Corequisite: 10-804-196, Trigonometry w Apps)

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

10-660-109 AC 3: RLC CIRCUITS ...power flow in complex AC circuits based on resistive and reactive components. Description of the power triangle and power factor. Calculation of voltages and currents in complex AC circuits. (Prerequisite: 10-660-108, AC 2: Reactance)

10-660-110 ELECTRONICS 1: DIODES-BASIC ...introduction to the characteristics and usage of semiconductor diodes in rectifiers and linear power supplies. Special diodes and diode circuits are also considered. (Prerequisite: 10-660-105, DC 2: Circuits; Corequisite: 10-660-107, AC 1: Properties)

10-660-111 ELECTRONICS 2: TRANSISTOR-BASIC ...introduction to the characteristics, bias and usage of semiconductor transistors in amplifying circuitry. BJTs, JFETs, MOSFETs and general amplifier characteristics are studied. (Prerequisite: 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. (Prerequisite: 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. (Prerequisite: 10-660-113, Digital 4: ALU)
Emergency Medical Technician-Basic
Technical Diploma - One Semester
Offered throughout the District. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

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. They also perform care in hospital emergency departments.

Program Outcomes
- Apply preparatory aspects of emergency care.
- Perform airway management.
- Perform patient assessment.
- Manage medical, behavioral, and trauma patients.
- Adapt principles to pediatric cases.
- Perform field operations.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- First priority for admission is given to applicants sponsored by a Wisconsin licensed ambulance service. Un-sponsored applicants are admitted only after the program is filled with sponsored students.
- Must be 18 years or older to enter training.
- Satisfactory placement in the NWTC reading evaluation.
- Current CPR recognition card (American Heart Association Health Care Provider or American Red Cross Professional Rescuer).
- Proof of current health status and immunizations.
- 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 website: www.dhfs.state.wi.us

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 private ambulance services, fire departments, and hospital-based ambulance services employ EMTs 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. Also performs care in hospital emergency departments.

Curriculum
The EMT-Basic Technical Diploma is a one-semester program. Upon graduation, a student will have completed 4 credits. This course is 144 hours long.

First Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-531-310</td>
<td>EMT-Basic</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Semester Total</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>4</td>
</tr>
</tbody>
</table>

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

30-531-310 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. (Prerequisite: Accepted into Emergency Medical Tech-Basic)

Note
- Successful program completion prepares and entitles the student to take the state license examination. A graduate is licensed only after successful completion of the licensing examination and application for a state license.
- Completion of First Responder (30-531-302) prior to program entry is highly recommended.

This program is not eligible for financial aid.
EMT Intermediate Technician

Technical Diploma - One Semester

Offered throughout the District. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
EMT Intermediate Technician students are Wisconsin licensed EMT-Basics seeking to upgrade their skills to the EMT Intermediate Technician level. EMT Intermediate Technician students perform emergency patient care, basic life support, and limited advanced life support in the field, transporting injured and ill patients to hospital emergency departments. They also perform care in hospital emergency departments.

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

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Must be 18 years or older to enter training.
• Satisfactory placement in the NWTC reading evaluation.
• Affiliation with a Wisconsin licensed ambulance service approved at the Intermediate Technician level.
• Current Wisconsin EMT-Basic license.
• Current CPR recognition card (American Heart Association Health Care Provider or American Red Cross Professional Rescuer).
• Physician medical director endorsement of EMT skill competency.
• Proof of current health status and immunizations.
• 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 website: www.dhfs.state.wi.us
• 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 with an EMT Intermediate Technical Diploma will have the potential for employment as an EMT Intermediate Technician with a Wisconsin ambulance service licensed to provide EMT Intermediate Technician level care. Most ambulance services in Wisconsin are volunteer, but private ambulance services, fire departments, and hospital - based ambulance services may employ EMT Intermediate Technicians in full-time paid positions. Some hospital emergency departments may also employ EMT Intermediate Technicians.

EMT Intermediate Technician: performs emergency patient care, basic life support, and limited advanced life support in the field, transporting sick and injured patients to hospital emergency departments. Also performs care in hospital emergency departments.

Curriculum
The EMT Intermediate Technician Technical Diploma is a one-semester program. Upon graduation, a student will have completed 2 credits. This course is 92 hours long.

First Semester
Catalog No.  Description Credits
30-531-340 EMT Intermediate Technician 2
Semester Total 2
Total Credits 2

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

30-531-340 EMT INTERMEDIATE TECHNICIAN...preparatory aspects, clinical decision-making, basic pharmacology, intravenous therapy, cardiovascular cases, diabetic, narcotic overdose, pediatrics, terrorism response and clinical skill competencies of EMT Intermediate Technician level care.

This program is not eligible for financial aid.

Visit our website at: www.nwtc.edu
Farm Business and Production Management  
Program Code 300901

Technical Diploma - six-year, part-time

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 732-3875. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Farm Business and Production Management covers basic farming production and business management principles needed to be an efficient farmer. Formal classes are delivered District-wide at locations convenient for the farmers.

Program Outcomes
- Calculate farm business cost of production for forage, grain, beef, pork, and milk.
- Prepare and assess a livestock management plan that is environmentally friendly.
- Prepare and assess a business financial plan.
- Develop and assess a soil and crop management plan that is environmentally friendly.
- Own, operate, and/or be employed in an agriculture-related industry.
- Implement a business, soil, crop, and livestock management plan that is environmentally friendly.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- 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. Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Note
Tuition assistance is available through the Wisconsin Dept. of Agriculture and the Wisconsin Technical College Categorical Funding Tuition Assistance Grant.

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.

First Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-090-381</td>
<td>Farm Business Operation</td>
<td>3</td>
</tr>
<tr>
<td>30-090-382</td>
<td>Soils Management</td>
<td>3</td>
</tr>
<tr>
<td>30-090-383</td>
<td>Crop Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>30-090-384</td>
<td>Livestock Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>30-090-385</td>
<td>Livestock Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>30-090-386</td>
<td>Farm Record/Busi Analy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Semester Total</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>18</td>
</tr>
</tbody>
</table>

This program is not eligible for financial aid.
Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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.
Financial Institutions Management

Associate Degree - Accelerated

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444. Visit the Financial Institutions Management web site at: network.nwtc.edu/credit

Program Description

Financial Institutions Management is designed for current or prospective employees of financial institutions seeking specialized training.

Program Outcomes

- Analyze business and consumer financial documents.
- Ensure compliance with state and federal laws.
- Recommend appropriate financial products to customers.
- Use personal financial planning techniques.
- Assess how economic policies and changes in the level of business activity affect the financial industry.
- Make loan decisions.
- Contact customers regarding outstanding balances.
- Negotiate payment proposals with customers.
- Manage the work of other people in a team environment.
- Deliver effective customer service.
- Use an electronic word processing computer program.
- Use an electronic spreadsheet computer program.
- Perform basic business math calculations.

Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- Basic math.
- Ability to use computer keyboard.

Employment Potential

The curriculum is structured to provide a climate for the development of the functional skills needed by participants from entry level through senior management.

A graduate of the program will have the potential for employment as a Customer Service Representative (CSR), Personal Banker, and Loan Officer.

Customer Service Representative (CSR): a primary contact person for customer services, identifies additional and appropriate financial services, guiding customers to the proper departments for specific products, and holds an influential position within a team environment.

Personal Banker: assists customers in opening accounts, explains bank services, and becomes involved in other financial institution services.

Loan Officer: processes and investigates applications for credit and makes decisions on loan applications.

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

- Commercial Banker
- Bank Officer

Note

- The courses beginning with course numbers 10-102-xxx and 10-104-xxx are delivered in an Accelerated Learning format. These courses have a compressed schedule. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.
- Learners interested in double majoring in Accounting or Business Administration Credit should consult with an instructor.

Curriculum

The Financial Institutions Management Associate Degree is an accelerated program. Upon graduation, a student will have completed 68 credits.

Technical Studies

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-102-151</td>
<td>Banking Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-104-111</td>
<td>Credit-Consumer</td>
<td>4</td>
</tr>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-132</td>
<td>Micro: Excel-Part 2</td>
<td>1</td>
</tr>
<tr>
<td>10-102-125</td>
<td>Mortgage Lend/Serv</td>
<td>3</td>
</tr>
<tr>
<td>10-102-153</td>
<td>Finance-Personal</td>
<td>3</td>
</tr>
<tr>
<td>10-102-167</td>
<td>Commercial Lending</td>
<td>3</td>
</tr>
<tr>
<td>10-101-110</td>
<td>Accounting 1</td>
<td>4</td>
</tr>
<tr>
<td>10-102-166</td>
<td>Collection Methods</td>
<td>3</td>
</tr>
<tr>
<td>10-102-180</td>
<td>Money/Banking</td>
<td>3</td>
</tr>
<tr>
<td>10-104-121</td>
<td>Credit Management Practices</td>
<td>3</td>
</tr>
<tr>
<td>10-102-150</td>
<td>Law-Business</td>
<td>3</td>
</tr>
<tr>
<td>10-102-101</td>
<td>Credit/Business Applications</td>
<td>3</td>
</tr>
<tr>
<td>10-102-155</td>
<td>Trust Functions/Service</td>
<td>3</td>
</tr>
<tr>
<td>10-102-161</td>
<td>Law-Credit</td>
<td>4</td>
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</tbody>
</table>

Credits for Technical Studies: 45

General Studies

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations Elective</td>
<td>2</td>
</tr>
</tbody>
</table>

Credits for General Studies: 23

Total Credits: 68

Suggested Electives:

Any course in the Business Administration Credit or Accounting program.

This program is fully eligible for financial aid.
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.

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

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.

10-102-101 CREDIT AND BUSINESS APPLICATIONS...credit, sales, purchasing, shipping, receiving, accounts receivable, accounts payable, and collection procedures, prepare/analyze financial statements, use Excel to solve financial problems, amortization, breakeven, depreciation, gain/loss, and inventory. (Prerequisite: 10-101-110, Accounting 1)

10-102-125 MORTGAGE LENDING/SERVICING...principles and practices involved in making and closing mortgage loans and servicing a sound mortgage portfolio, including the secondary mortgage market. (Prerequisite: 10-104-111, Credit-Consumer)

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.

10-102-161 LAW-CREDIT...Uniform Commercial Code, credit regulations, Wisconsin Consumer Protection Law, collection law, and bankruptcy. (Prerequisite: 10-102-167, Commercial Lending OR 10-104-117, Credit-Business)

10-102-166 COLLECTION METHODS...know your debtor, collection laws, pre-legal and legal methods used in collections, negotiating payment proposals, NSF checks, skip tracing, and bankruptcy. (Prerequisite: 10-102-167, Commercial Lending OR 10-104-117, Credit-Business)

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. (Prerequisite: 10-104-111, Credit-Consumer)

10-102-180 MONEY/BANKING...economics and banking, commercial banking system, money supply, investments and loans, Federal Reserve System, and international monetary system.

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

10-103-131 MICRO: EXCEL-INTRODUCTION...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2...advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel’s database features and analysis tools. Requires prior completion of Excel Intro.

10-104-111 CREDIT-CONSUMER...the role of consumer credit, loan processes, collections, financial advising and counseling; loan, promotion, and bank policies; consumer, commercial, mortgage loans, and credit cards.

10-104-121 CREDIT MANAGEMENT PRACTICES...manager's responsibilities/environment, planning, problem solving, organizational structure/cultures, staffing/human resources, leadership/teambuilding, motivational techniques, communications, management controls, ineffective performers, and ethical business practices. (Prerequisite: 10-102-167, Commercial Lending, OR 10-104-117, Credit-Business)

Visit our website at: www.nwtc.edu
Fire Protection Engineering Technology

Associate Degree - Two Years

Offered at the Marinette campus. For information: (715) 735-9361.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Fire Protection Engineering Technology teaches students to design, install, and service automatic sprinkler, fire alarm, and special hazard fire suppression systems.

Program Outcomes
- Analyze developments in the fire protection field.
- 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 Academic Skills Assessment section of this catalog for more information.
- 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 ensures compliance with federal, state, and municipal codes and ordinances.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Fire Protection Consultant
- Fire Protection Equipment Sales Manager
- Industrial Safety Manager
- Municipal Safety Manager
- Property Loss/Risk Management Specialist

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

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-503-113</td>
<td>Fire Extinguisher-Portable</td>
<td>2</td>
</tr>
<tr>
<td>10-503-114</td>
<td>Fire Protection Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>10-503-115</td>
<td>Fire Tech Prt Rdg/Sketching</td>
<td>3</td>
</tr>
<tr>
<td>10-606-115</td>
<td>CAD</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
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Semester Total        17

Second Semester

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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>10-503-120</td>
<td>Special Hazards Systems 1</td>
<td>3</td>
</tr>
<tr>
<td>10-503-126</td>
<td>Sprinkler Hydraulics-Auto</td>
<td>3</td>
</tr>
<tr>
<td>10-503-132</td>
<td>Fire Detection-Elec 1</td>
<td>3</td>
</tr>
<tr>
<td>10-503-136</td>
<td>Sprinkler Systems 1</td>
<td>2</td>
</tr>
<tr>
<td>10-503-180</td>
<td>Nicet-Basic</td>
<td>2</td>
</tr>
<tr>
<td>10-606-128</td>
<td>CAD-Fire Tech Advanced</td>
<td>1</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
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</table>

Semester Total        17

Third Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>10-503-128</td>
<td>Fire Alarm System Design</td>
<td>2</td>
</tr>
<tr>
<td>10-503-129</td>
<td>Fire Alarm Systems Application</td>
<td>1</td>
</tr>
<tr>
<td>10-503-135</td>
<td>Fire Detection-Elec 2</td>
<td>3</td>
</tr>
<tr>
<td>10-503-137</td>
<td>Sprinkler Systems 2</td>
<td>4</td>
</tr>
<tr>
<td>10-503-138</td>
<td>Hazard Analysis</td>
<td>3</td>
</tr>
<tr>
<td>* 10-503-1xx</td>
<td>NICET Advanced</td>
<td></td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
</tbody>
</table>

Semester Total        17

Fourth Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-503-140</td>
<td>Special Hazards Systems 2</td>
<td>3</td>
</tr>
<tr>
<td>10-503-148</td>
<td>Technical Project</td>
<td>3</td>
</tr>
<tr>
<td>* 10-503-1xx</td>
<td>NICET Advanced</td>
<td></td>
</tr>
<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
</tr>
</tbody>
</table>

Semester Total        17

Total Credits        68

* Any three of the six NICET courses must be taken prior to graduation.

NICET Advanced Sprinklers 1
1 credit – offered third semester

NICET Advanced Special Haz 1
1 credit – offered fourth semester

NICET Advanced Special Haz 2
1 credit – offered fourth semester

NICET Advanced Alarms 1
1 credit – offered fourth semester

NICET Advanced Alarms 2
1 credit – offered fourth semester

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.

10-503-113 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.

10-503-114 FIRE PROTECTION FUNDAMENTALS
...combustion processes, fire detection technology, fire suppression technology, fire protection mathematics, historical fires, fire codes, building codes, contracts, bidding, liability, the domestic and international fire protection industry, and career opportunities.

10-503-115 FIRE PROTECTION BLUEPRINT READING/SKETCHING
...reading floor plans, details, site plans, electrical, HVAC, plumbing and fire protection plans, performing and sketching site surveys for fire protection, preparing bill of materials, and interpreting specifications.

10-503-120 FIRE HAZARDS SYSTEMS 1-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.

10-503-126 SPRINKLER HYRAULICS-AUTOMATIC
...hydraulic calculations for tree, loop, and grid systems using manual and computerized methods; and testing and evaluating water supplies for fire protection.

10-503-128 FIRE ALARM SYSTEM DESIGN
...the operating principles, selection and application of automatic fire detectors; proper location and spacing of detectors; the selection and use of notification appliances; and various types of fire alarm systems.

10-503-129 FIRE ALARM SYSTEMS APPLICATIONS
...the interconnection of automatic fire detectors, notification appliances and fire alarm panels; addressability of devices; programming of addressable fire alarm panels; and troubleshooting of addressable panels.

10-503-132 FIRE DETECTION-ELECTRONICS 1
...basic concepts of AC/DC electrical circuits, Ohm’s Law, series/parallel resistance, conductors, insulators, batteries, and electromagnetic induction used in fire protection.

10-503-135 FIRE DETECTION-ELECTRONICS 2
...electronic sensing and activating systems, detection, alarm and suppression systems, component parts, power sources, and testing and troubleshooting fire protection systems. (Prerequisite: 10-503-132, Fire Detection-Elec 1)

10-503-136 SPRINKLER SYSTEMS 1
...automatic fire sprinkler systems emphasizing types of sprinkler systems and their application, hazard classifications, automatic fire sprinkler system components, and sprinkler system design approaches.

10-503-137 SPRINKLER SYSTEMS 2
...fire protection requirements of automatic sprinkler systems, design pipe schedule and hydraulically calculated water suppression systems, foam systems, and fire pump selection. (Prerequisite: 10-503-136, Sprinkler Systems 1)

10-503-138 HAZARD ANALYSIS
...planning, surveying, and making professional recommendations regarding appropriate fire prevention, and suppression and detection systems for specified industrial fire hazards.

10-503-140 SPECIAL HAZARDS SYSTEMS 2
...the design of special hazard systems emphasizing total flooding and local application CO2 systems, inert gas and halocarbon clean agent systems. (Prerequisites: 10-503-130, Fire Detector Selection; 10-503-120, Special Hazards Systems 1)

10-503-148 TECHNICAL PROJECT
...independent research report or project utilizing technical and communication skills from Fire Protection Engineering Technician program.

10-503-180 NICET-BASIC
...procedures, forms, standards, codes, and general knowledge necessary to successfully pass the crossover work elements in level 2 - NICET Certification in “Auto Sprinkler, Special Hazard, and Fire Alarm Systems Layouts.”

10-503-185 NICET ADVANCED SPRINKLERS 1
...certification preparation for Level I and Level II NICET work elements in the subfield of Automatic Sprinkler System Layout.

10-503-186 NICET ADVANCED SPRINKLERS 2
...certification preparation for Level III and Level IV NICET work elements in the subfiled of Automatic Sprinkler System Layout. (Prerequisite: 10-503-185, NICET Advanced Sprinklers 1)

10-503-187 NICET ADVANCED SPECIAL HAZARDS 1
...certification prepared for Level I and Level II NICET work elements in the subfield of Special Hazards Systems.

10-503-188 NICET ADVANCED SPECIAL HAZARDS 2
...certification preparation for Level III and Level IV NICET work elements in the subfield of Special Hazards Systems. (Prerequisite: 10-503-187 NICET Advanced Spec Haz 1)

10-503-189 NICET ADVANCED ALARMS 1
...certification preparation for Level I and Level II NICET work elements in the subfield of Fire Alarms.

10-503-190 NICET ADVANCED ALARMS 2
...certification preparation for Level III and Level IV NICET work elements in the subfield of Fire Alarms. (Prerequisite: 10-503-189 NICET Advanced Alarms 1)

10-606-115 CAD (COMPUTER AIDED DRAFTING)
...entry level computer-aided graphics with AutoCAD software; using basic and advanced drawing, display, editing, dimensioning, and plotting commands.

10-606-128 CAD-FIRE TECH ADVANCED
...advanced definition and use of: blocks, user coordinate systems, external references, attributes, and layouts for drawing and plotting; and drawing exchange procedures. (Prerequisite: 10-606-115, Computer Aided Drafting)

10-804-106 INTRODUCTION TO COLLEGE MATH
...an introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool. (Prerequisites: Accuplacer (Arithmetic) score = 57 OR TABE Level A Math Score = 10.5)
Program Code 314692

**Technical Utility Construction and Service**

**Technical Diploma - Nine Month (June Start Date)**

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

**Program Description**

Gas Utility Construction and Service prepares students to install, maintain, and operate natural and propane gas distribution systems used to supply residential, commercial, and industrial customers.

**Program Outcomes**

- Communicate technical information.
- Operate tools and equipment.
- Join pipe.
- Install propane gas distribution systems.
- Install natural gas distribution systems.
- Apply customer service skills.
- Maintain gas distribution systems.
- Operate pipeline excavation equipment.
- Service gas appliances.
- Opportunity to secure a commercial driver’s license (CDL).

**Requirements for Program Entry**

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

**Note**

Students receive a certificate for 49 operator qualification training modules from the Midwest Energy Association. This certificate is recognized throughout the United States. Northeast Wisconsin Technical College is recognized as a Midwest Energy Association Regional Evaluation Center for testing and training entry and incumbent workers.

Students also receive selected Pipeline Operator qualifications as mandated by the Federal Office of Pipeline Safety.

**Employment Potential**


**Propane Gas Delivery Person:** delivers bulk propane gas to customers and interacts with customers.

**New Customer Tank And Cylinder Installer:** installs propane and connects piping to customer appliances.

**Bulk Plant Operator:** fills and maintains cylinders and fills bulk delivery trucks.

**Gas Construction Mechanic:** installs and maintains gas distribution and transmission pipelines using trenching, backhoe, 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/cooling equipment.

**Underground Facilities Locator:** locates and marks all underground facilities prior to excavation using various locating equipment.

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

- 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 nine-month, three-semester program. Upon graduation, a student will have completed 33 credits.

**First Semester**

<table>
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<tr>
<th>Catalog No.</th>
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<td>10-804-110</td>
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<tr>
<td>31-442-315</td>
<td>Welding-Gas Service 1</td>
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<tr>
<td>31-469-310</td>
<td>Gas Utility Field Trng 1</td>
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**Second Semester**

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<tr>
<td>31-413-348</td>
<td>Electricity-Basic</td>
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<tr>
<td>31-442-325</td>
<td>Welding-Gas Service 2</td>
<td>2</td>
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<tr>
<td>31-469-320</td>
<td>Gas Utility Field Trng 2</td>
<td>5</td>
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<tr>
<td>31-469-330</td>
<td>Gas Utility Field Trng 3</td>
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<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
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<td>31-801-386</td>
<td>Communicating Effectively</td>
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**Third Semester**

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<tbody>
<tr>
<td>31-413-358</td>
<td>Electricity-Gas Appliance</td>
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<tr>
<td>31-422-310</td>
<td>Metallurgy</td>
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<td>31-469-340</td>
<td>Gas Utility Field Trng 4</td>
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<td><strong>Total Credits</strong></td>
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<td>33</td>
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</table>

This program is fully eligible for financial aid.
Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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: 31-469-320, Gas Utility Field Training 2)

31-469-340 GAS UTILITY FIELD TRAINING 4...installation, maintenance, and repair of residential gas appliances, venting codes, line stoppering equipment, corrosion control, regulators, metering, first aid, and customer service training. (Prerequisite: 31-469-330, Gas Utility Field Training 3)
Health Care Business Services

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Health Care Business Services prepares a student to work in the business office of medical and dental clinics, hospitals, nursing homes, related health care facilities, health insurance settings in administrative, financial, and customer service roles.

Students who have an interest in the business and information aspects of health care, but are unsure of their preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes
• 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.

Internship
Students will be required to purchase a nametag, pay for liability insurance, provide their own transportation to internship sites, and cover any other expenses related to internship experiences. Students may be expected to travel distances to internships.

Students will be required to maintain highest confidentiality of client records and will need to sign a statement promising to adhere to the HIPAA regulations.

Students may be required to complete a physical examination and TB test prior to beginning the health care business services internship in the fourth semester.

Requirements For Program Admission
Prior to submitting an application candidates must have taken an Academic Skills Assessment or ACT assessment within the last three years. Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.

Employment Potential
A graduate of this program will have the potential for employment as a Medical Accountant/Bookkeeper, Admitting Representative, Appointment Secretary, Claims Analyst, Insurance Billing Specialist, Medical Records Associate, Patient Services Representative, Patient Accounts Associate, Provider Relations Associate, 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 Specialist: makes sure that patient accounts are billed to the proper insurance carrier and all needed patient information is collected.

Medical Records Associate: handles all patient medical records in areas 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 Associate: records money, makes bank deposits, provides for collection preparation.

Provider Relations Associate: works with contracted medical providers to implement contract terms and provider staff training.

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 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
• Patient Accounts Supervisor
• Health Insurance Supervisor/Trainer
• Certified-coding Specialist
• Health Insurance Provider Contract Analyst
• Physician Relations Administrator

Requirements for Program Entry
• It is strongly recommended that candidates meet the program Academic Skills Assessment benchmarks prior to beginning coursework, or achieve a score of 20 on ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend spring program orientation.

Suggested Skills for Success
Students are expected to have entry-level computer and keyboarding skills. It is recommended that students complete basic computer and keyboarding skills coursework if deficient in this area. Students will work with patients, health care providers, and co-workers. Effective communication and interpersonal skills will be required.

Curriculum
The Health Care Business Services Associate Degree is a two-year, four-semester program. Upon graduation, a student will have completed 65 credits.

First Semester

<table>
<thead>
<tr>
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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-103-111</td>
<td>Micro: Windows-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-501-101</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>10-530-172</td>
<td>Healthcare Delivery Systems</td>
<td>2</td>
</tr>
<tr>
<td>10-530-176</td>
<td>Health Data Management</td>
<td>2</td>
</tr>
<tr>
<td>10-530-181</td>
<td>Intro to Health Record</td>
<td>1</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Semester Total</td>
<td>16</td>
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Second Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-151</td>
<td>Micro: PowerPoint-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-160-143</td>
<td>Medical Practice Prod</td>
<td>3</td>
</tr>
<tr>
<td>10-160-161</td>
<td>Insurance Health Principles</td>
<td>2</td>
</tr>
<tr>
<td>10-530-155</td>
<td>Diagnostic/Procedure Coding</td>
<td>3</td>
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<tr>
<td>10-530-178</td>
<td>Healthcare Legal &amp; Ethic Issue</td>
<td>2</td>
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<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
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Third Semester

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<th>Catalog No.</th>
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<tr>
<td>10-101-110</td>
<td>Accounting 1</td>
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<tr>
<td>10-103-141</td>
<td>Micro: Access-Intro</td>
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<td>10-104-191</td>
<td>Customer Service Mgmt</td>
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<td>10-160-151</td>
<td>Health Care Relations</td>
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<td>10-530-120</td>
<td>Medical Transcription</td>
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<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
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<td>10-809-198</td>
<td>Intro to Psychology</td>
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Fourth Semester

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<td>10-160-140</td>
<td>Health Care Internship</td>
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<td>10-160-165</td>
<td>HCBS Organizational Resources</td>
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<tr>
<td>10-160-166</td>
<td>Medical Billing Processes</td>
<td>3</td>
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<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
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<td>10-809-196</td>
<td>Intro to Sociology</td>
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</table>

* No final grade lower than “C” is acceptable in any of the courses marked with an asterisk.

A student must repeat the particular course to achieve a “C” or better final grade in order to continue in or graduate from this program.

Suggested Electives:
Health Care Business Trends, 10-160-144
Team Building and Problem Solving, 10-196-189
Health Care Quality Management, 10-530-193
Health Care Statistics & Research, 10-530-177

This program is fully eligible for financial aid.

Note
A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.
Course Descriptions

Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.

Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.

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

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.

10-103-111 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; creating headers/footers; creating and formatting tables, creating charts; outlines, and web pages; and applying styles. Requires Windows experience.

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...prepare handouts and slide shows using templates, animations, transitions, sounds, and hyperlinks. Requires Windows experience.

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.

10-160-140 HEALTH CARE BUSINESS SERVICES INTERNSHIP ...career planning, resumes, interviews, search strategy, actual health care work experience, applied workplace improvements and ethical model. (Prerequisites: 10-160-166, Medical Billing Procedures and Student must be accepted in the Health Care Business Services Program)

10-160-143 MEDICAL PRACTICE PROCEDURES ...professional duties, medical scheduling, admissions, medical office software, 10-key, third-party payer processes, managed care procedures, empathy, diversity, medical records, confidentiality, information systems, regulation, office medical administration. (Prerequisites: 10-103-111, Micro: Windows Intro; 10-103-121, Micro: Word-Intro; 10-530-176, Health Data Management)

10-160-151 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. (Prerequisite: 10-160-161, Insurance Health Principles)

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. (Prerequisite: 10-530-172, Healthcare Delivery Systems)

10-160-165 HCBS ORGANIZATIONAL RESOURCES ...a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Prerequisite: 10-160-143, Medical Practice Procedures)

10-160-166 MEDICAL BILLING PROCESSES ...optimizing key billing and collection processes; breaking down the billing and collection process; granting credit in a medical facility; examine expected performance outcomes and advanced billing practices. (Prerequisites: 10-101-110, Accounting 1; 10-160-143, Medical Practice Procedures)

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-530-120 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: 10-501-101, Medical Terminology; 10-103-121, Micro:Word Introduction)

10-530-155 DIAGNOSTIC/PROCEDURE CODING ...the International Classification of Diseases and Current Procedural Terminology with emphasis on coding skills, use of this classification system in health care settings, its application for statistical and reimbursement purposes. (Prerequisite: 10-501-101, Medical Terminology)

10-530-172 HEALTHCARE DELIVERY SYSTEMS ...examines the organization, financing, regulation, and delivery of health care services. Includes the study of healthcare professionals.

10-530-176 HEALTH DATA MANAGEMENT ...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisites: 10-530-181, Intro to Health Record; 10-530-172, Healthcare Delivery Systems)

10-530-178 HEALTHCARE LEGAL & ETHICAL ISSUES ...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management)

10-530-181 INTRO TO THE HEALTH RECORD ...illustrate the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.
Health Information Technology

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Code 105301

Program Description
The Health Information Technology program teaches students to work with medical records and statistics, code medical data, maintain health record systems, 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 preferences in this growing field, have a special opportunity to explore their options. The Health Information Technology and Health Care Business Services programs share many courses throughout the curriculum. This allows students to explore opportunities in both fields. This is a unique opportunity within the College.

Program Outcomes
• Adhere to health information requirements and standards.
• Utilize clinical classifications.
• Support data collection and reimbursement systems.
• Abstract health care data for analysis and presentation.
• Adhere to security, privacy and confidentiality policies.
• Use information technology systems to process health information.
• Apply organizational management techniques to improve efficiency of departmental functions and services.
• Model professional behavior, ethics, and appearance.

Professional Practice Experience
Students will be required to purchase a nametag, provide their own transportation to assigned sites, and cover any other expenses related to professional experiences. Students may be expected to travel distances to assigned sites.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us

Students will be required to complete a physical examination within three months prior to Professional Practice Experience and maintain current immunization information.

Accreditation
The Health Information Technology program is accredited by the Commission on the Accreditation for Health Informatics and Information Management Education in cooperation with the Council on Accreditation of the American Health Information Management Association, 233 N. Michigan Avenue, Suite 2150, Chicago, IL, 60601-5800, Phone: (312) 233-1131.

Board/Certification Examinations
Graduates of the program are eligible to take the national accreditation examination offered by the American Health Information Management Association (AHIMA) to become a Registered Health Information Technician (RHIT).

Requirements for Program Admission
Candidates submitting an application must take an Academic Skills Assessment or ACT assessment within the last three years. Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• One year of Biology, or equivalent, with a grade of “C” or better. If in high school, “C” in two semesters of each.
• Students must complete a Keyboard Self-Assessment to determine keyboarding skills and potential remediation needs.

Employment Potential
A graduate of this program will have the potential for employment as a Coder/Abstractor, Release of Information Specialist, Health Record Analyst, Discharge Analyst, Cancer Registrar, Medical Transcription Supervisor, 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, record storage and retrieval, computer vendors, and copy, coding and medical transcription 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 Transcription Supervisor: uses transcription and word processing equipment to transcribe and manage 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/disease 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.

Priority Admission
Applicants with documentation of completion of General Anatomy and Physiology with a “C” or better, will receive priority standing among that year’s applicant pool.

Requirements for Program Entry
• It is strongly recommended that candidates meet the program Academic Skills Assessment benchmarks prior to beginning coursework, or achieve a score of 20 on ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend spring program orientation.

Suggested Skills for Success
Students are expected to have entry-level computer and keyboarding skills. It is recommended that students complete basic computer and keyboarding skills coursework if deficient in this area.

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-103-111</td>
<td>Micro: Windows-Intro</td>
<td>1</td>
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<td>10-103-121</td>
<td>Micro: Word-Intro</td>
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<tr>
<td>10-501-101</td>
<td>Medical Terminology</td>
<td>3</td>
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<tr>
<td>* 10-530-172</td>
<td>Healthcare Delivery Systems</td>
<td>2</td>
</tr>
<tr>
<td>* 10-530-176</td>
<td>Healthcare Data Management</td>
<td>2</td>
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<td>Intro to Health Record</td>
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<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
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<tr>
<td>* 10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
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Semester Total 17

Second Semester

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<tr>
<td>10-103-151</td>
<td>Micro: PowerPoint-Intro</td>
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<tr>
<td>* 10-530-178</td>
<td>Healthcare Legal &amp; Ethic Issue</td>
<td>2</td>
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<tr>
<td>* 10-530-182</td>
<td>Human Disease for Hlth Prof</td>
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<tr>
<td>* 10-530-183</td>
<td>ICD-9-CM-Coding</td>
<td>3</td>
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<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
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<td>10-804-123</td>
<td>Math with Business Apps</td>
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Semester Total 17

Third Semester

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<td>* 10-530-184</td>
<td>CPT Coding</td>
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<tr>
<td>* 10-530-185</td>
<td>Healthcare Reimbursement</td>
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<td>* 10-530-190</td>
<td>Healthcare Info Systems</td>
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<tr>
<td>* 10-530-196</td>
<td>Professional Practice 1</td>
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<td>10-809-198</td>
<td>Intro to Psychology</td>
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Semester Total 16

Fourth Semester

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<td>HIM Organizational Resource</td>
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<td>Applied Coding</td>
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<td>* 10-530-198</td>
<td>Professional Practice 2</td>
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<td>Race Ethnic &amp; Diversity</td>
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<td>10-809-195</td>
<td>Economics</td>
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Semester Total 15

Total Credits 65

* No final grade lower than "C" is acceptable in any of the courses marked with an asterisk. A student must repeat the particular course to achieve a "C" or better final grade in order to continue in or graduate from this program.

Note
A candidate who does not meet the requirements for program entry should meet with an NWTC counselor to develop a learning plan to make up any deficiencies through testing or course work.

This program is fully eligible for financial aid.

Northeast Wisconsin Technical College 2006-2007 Catalog
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.

Course Descriptions

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

10-530-172 HEALTHCARE DELIVERY SYSTEMS
...examines the organization, financing, regulation, and delivery of health care services. Includes the study of healthcare professionals.

10-530-176 HEALTH DATA MANAGEMENT
...introduces the use and structure of health care data elements, data sets, data standards, their relationships to primary and secondary record systems and health information processing. (Corequisites: 10-530-181, Intro to Health Record; 10-530-172, Healthcare Delivery Systems)

10-530-177 HEALTHCARE STATISTICS & RESEARCH
...explores the management of medical data for statistical purposes. Focuses on descriptive statistics, including definitions, collection, calculation, compilation, and display of numerical data. Vital statistics, registries, and research are examined. (Prerequisite: 10-530-176, Health Data Management)

10-530-178 HEALTHCARE LEGAL & ETHICAL ISSUES
...examines regulations for the content, use, confidentiality, disclosure, and retention of health information. An overview of the legal system and ethical issues are addressed. (Prerequisite: 10-530-176, Health Data Management)

10-530-181 INTRO TO THE HEALTH RECORD
...illustrates the flow of health information in various health care delivery systems and within the health information department; retrieve data from health records; professional ethics; confidentiality and security of information.

10-530-182 HUMAN DISEASES FOR THE HEALTH PROFESSION
...This course focuses on the common diseases of each body system as encountered in all types of health care settings by health information professionals. Emphasis is placed on understanding the etiology (cause), signs and symptoms, diagnostic tests, and treatment (including pharmacologic) of each disease. (Corequisites: 10-501-101 Medical Terminology AND 10-806-177 General Anat/Phys)

10-530-183 ICD-9-CM CODING...
...assign ICD-9-CM codes supported by medical documentation at entry level; apply ICD-9-CM instructional notations, conventions, rules, and official coding guidelines to case studies and actual medical record documentation. (Corequisites: 10-501-101 Medical Terminology; 10-530-181 Intro to Health Records; 10-530-182 Human Diseases for Health Professions; 10-806-177 General Anatomy & Physiology)

10-530-184 CPT CODING...
...assign CPT codes supported by medical documentation at entry level; apply CPT instructional notations, conventions, rules, and official coding guidelines, case studies and actual medical record documentation. (Corequisites: 10-501-101 Medical Terminology; 10-530-181 Intro to Health Records; 10-530-182 Human Diseases for Health Professions; 10-806-177 General Anatomy & Physiology)

10-530-185 HEALTHCARE REIMBURSEMENT...
...compare and contrast health care payers, illustrate the reimbursement cycle and comply with regulations for fraud and abuse. Assign Diagnosis Related Groups, Ambulatory Payment Classifications, and Resource Utilization Groups at entry-level. (Corequisites: 10-501-101 Medical Terminology; 10-530-181 Intro to Health Records; 10-530-182 Human Diseases for Health Professions; 10-530-183 ICD-9-CM Coding; 10-530-184 CPT Coding; 10-806-177 General A & P)

10-530-190 HEALTHCARE INFORMATION SYSTEMS...
...emphasizes the role of information technology in healthcare through an investigation of the electronic health record, business, and health information software applications. Assist in information systems design and implementation. (Prerequisites: 10-530-176, Health Data Management; 10-103-121, Micro: Word-Intro; 10-103-141, Micro: Access-Intro; 10-103-131, Micro: Excel-Intro; 10-103-151, Micro: Powerpoint-Intro)

10-530-193 HEALTHCARE QUALITY MANAGEMENT...
...addresses regulatory requirements as related to quality improvement, utilization (case) management, risk management, and medical staff credentialing through the use of quality improvement methodologies and tools. (Prerequisite: 10-530-177, Healthcare Statistics & Research)

10-530-194 HIM ORGANIZATIONAL RESOURCES...
...a study of the principles of management to include planning, organizing, human resource management, directing, and controlling as related to the health information department. (Corequisite: 10-530-193, Healthcare Quality Management)

10-530-195 APPLIED CODING...
...assign ICD and CPT/HCPCS codes supported by medical documentation at intermediate level. Prepare appropriate physician queries in accordance with compliance guidelines and will assign codes to optimize appropriate reimbursement. (Prerequisites: 10-530-183, ICD-9-CM Coding; 10-530-184, CPT Coding; 10-530-185, Reimbursement in Healthcare)

10-530-196 PROFESSIONAL PRACTICE EXPERIENCE 1...
...this supervised clinical provides application of previously acquired skills and knowledge with experiences in the technical procedures of health record systems in a health care facility discussion of clinical situations. (Prerequisite: 10-530-178, Healthcare Legal & Ethical Issues. Corequisites: 10-530-183, ICD-9-CM Coding; 10-530-177, Healthcare Statistics & Research; 10-530-184, CPT Coding)

10-530-198 PROFESSIONAL PRACTICE EXPERIENCE 2...
...this supervised clinical provides application of previously acquired skills and knowledge, discussion of clinical situations, preparation for the certification examination and pre-graduation activities. (Prerequisites: 10-530-196, Professional Practice 1; 10-530-190, Healthcare Information Systems; Corequisites: 10-530-193, Healthcare Quality Management; 10-530-195, Applied Coding; 10-530-194 HIM Organizational Resources)
**Program Description**
Heating, Ventilation, Air Conditioning, and Refrigeration Technology prepares students to work with the control of air in respect to its heating, cooling, humidity, and cleanliness. Students will be able to install, service, troubleshoot, and repair HVAC/R systems.

**Program Outcomes**
- 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 Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent.
- NWTC placement exam determines starting level in program.
- 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 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, installing, servicing, troubleshooting, and repairing walk-in coolers/freezers; reach-in coolers/freezers; ice makers; large air conditioning, heating, and air distribution systems; hydronic, steam, and forced air heating systems; roof top HVAC/R systems; and digital building automation control systems.

**Industrial HVAC/R Systems:** 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, installing, servicing, troubleshooting, and repairing large HVAC/R equipment used in the manufacturing process, such as drive-in coolers/freezers, process chillers and boilers, dust collection systems, plant air conditioning and heating, digital control of process, and building HVAC/R equipment.

**Residential HVAC/R Systems:** require the Technician to work with HVAC/R systems used in the home. Duties would include, but not limited to, installing, servicing, troubleshooting, and repairing refrigerator/freezers, central air conditioning system operating controls.

With additional education and/or work experience, graduates may find other opportunities for employment.
- HVAC/R Business Owner
- Energy Management Technician
- Engineering Assistant for HVAC/R Systems

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

**First Semester**
- **Catalog No.**
- **Description**
- **Credits**
- 10-601-111 HVAC/R Electrical Fundamentals
- 10-601-112 HVAC/R Mechanical Service Fund
- 10-601-133 HVAC/R Refrigeration Fund
- 10-606-112 Engineering Applications
- 10-103-111 Micro: Windows-Intro
- 10-103-121 Micro: Word-Intro
- 10-103-122 Micro: Word-Part 2
- 10-103-131 Micro: Excel-Intro
- 10-103-132 Micro: Excel-Part 2
- 10-103-141 Micro: Access-Intro
- 10-103-142 Micro: Access-Part 2
- 10-103-151 Micro: PowerPoint-Intro
- 10-103-160 Micro: Outlook
- 10-804-110 Elem Algebra w Apps
- 10-809-199 Psychology Of Human Relations
- **Total Credits**

**Second Semester**
- 10-601-113 HVAC/R Refrig/Air Cond Syst
- 10-601-121 HVAC/R Heating Fundamentals
- 10-601-127 HVAC/R Control Circuits
- 10-601-128 HVAC/R Heating Systems
- 10-614-129 Architectural Mech Systems
- 10-801-195 Written Communication
- **Total Credits**

**Third Semester**
- 10-601-131 HVAC/R Heating System Appl
- 10-601-132 HVAC/R Air Conditioning Appl
- 10-601-147 HVAC/R Motor Control Appl
- 10-801-197 Technical Reporting
- 10-809-172 Race Ethnic & Diversity
- 10-809-197 Contemporary Amer Society
- **Total Credits**

**Fourth Semester**
- 10-601-135 HVAC/R Hydronic System Appl
- 10-601-141 HVAC/R Systems Service
- 10-601-143 HVAC/R Refrigeration Appl
- 10-601-145 HVAC/R Control System Appl
- 10-801-196 Oral/Interpersonal Comm
- **Total Credits**

This program is fully eligible for financial aid.
Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-601-112</td>
<td>HVAC/R MECHANICAL SERVICE FUNDAMENTALS</td>
<td>Mechanical service fundamentals, basic sheet metal practices, proper tool usage procedures, ferrous metal piping procedures, brazing, soldering, copper piping practices, basic HVAC/R mechanical service repair/replacement procedures. (Prerequisite: Accepted into HVAC Tech Program)</td>
</tr>
<tr>
<td>10-601-113</td>
<td>HVAC/R REFRIGERATION/AIR CONDITIONING SYSTEMS</td>
<td>Residential/light commercial refrigeration and air conditioning system analysis, start-up, service, repair and troubleshooting using industry standard tools and techniques, evacuation, recovery, charging techniques, Federal certification preparation. (Prerequisites: 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits)</td>
</tr>
<tr>
<td>10-601-122</td>
<td>HVAC/R CONTROL CIRCUITS</td>
<td>Relay and HVAC/R electrical control circuit schematic development and analysis; wiring, testing and troubleshooting relay and HVAC/R control circuits; diagnose common HVAC/R system problems by analyzing the control circuit. (Prerequisites: 10-601-111, HVAC/R Electrical Fundamentals; 10-601-133, HVAC/R Refrigeration &amp; AC Fundamentals; 10-601-112, HVAC/R Mechanical Service Fund)</td>
</tr>
<tr>
<td>10-601-128</td>
<td>HVAC/R HEATING SYSTEMS</td>
<td>Heating controls, heating control circuit basics, analysis of electrical controls for fossil fuel systems, wiring, start-up and service of residential furnaces. (Prerequisites: 10-601-121, HVAC/R Heating Fundamentals; 10-601-127, HVAC/R Control Circuits)</td>
</tr>
<tr>
<td>10-601-131</td>
<td>HVAC/R HEATING SYSTEM APPLICATIONS</td>
<td>Interpreting control system diagrams, control circuit analysis, service and troubleshooting residential and commercial fossil fuel heating systems, rooftops and split systems. (Prerequisite: 10-601-132, HVAC/R Air Conditioning Applic)</td>
</tr>
<tr>
<td>10-601-132</td>
<td>HVAC/R AIR CONDITIONING APPLICATIONS</td>
<td>Air properties, air system component application fundamentals, indoor air quality fundamentals, system measurement, adjustment, and troubleshooting to control temperature and humidity in HVAC systems. (Prerequisites: 10-601-113, HVAC/R Refrig/Air Cond Sys; 10-601-128, HVAC/R Heating Systems; Corequisite: 10-601-147, HVAC/R Motor Control App)</td>
</tr>
<tr>
<td>10-601-133</td>
<td>HVAC/R REFRIGERATION FUNDAMENTALS</td>
<td>Principles of refrigeration and air conditioning, temperature, heat and pressure measurement, system component operation, testing for proper system operation using industry standard tools and techniques. (Prerequisite: Accepted into HVAC Tech program)</td>
</tr>
</tbody>
</table>

Visit our website at: www.nwtc.edu

113
Hotel and Restaurant Management

Associate Degree - Two Years

Offered at the Green Bay and Sturgeon Bay campuses. For information in Green Bay: (920) 498-5444. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Hotel and Restaurant Management prepares students for a variety of mid-management positions in lodging operations, food service operations, and tourism services. The program is grounded in experiential learning and involves extensive internship requirements.

Program Outcomes
- Develop a personal career plan in the hospitality industry.
- Maximize profits in the lodging and food service industry.
- Plan a conference plan or special event.
- Manage cleaning and sanitation operations in the food service and lodging industry.
- Maximize facility productivity.
- Understanding preventative maintenance and equipment service.
- Manage quality customer service systems.
- Apply product presentation principles in the hospitality industry.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- High School graduate or equivalent.
- 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 work assignments.

Sales Manager: plans and administers sales programs to generate sales in a hotel or tourism organization, organizes prospect files, plans and prepares advertising and promotional materials, and arranges for publicity.

With additional education and/or work experience, graduates may find other opportunities for employment.
- General Manager
- Marketing Director
- Restaurant Manager
- Catering Manager

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

First Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-141</td>
<td>Micro: Access-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-104-110</td>
<td>Marketing Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-109-113</td>
<td>Hospitality/Tourism-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-145-177</td>
<td>Business Mgmt-Small OR</td>
<td>3</td>
</tr>
<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
<td></td>
<td><strong>18</strong></td>
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Second Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-104-101</td>
<td>Selling Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-104-191</td>
<td>Customer Service Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-109-126</td>
<td>Food/Lodging Cost Control</td>
<td>3</td>
</tr>
<tr>
<td>10-801-198</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
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<td><strong>15</strong></td>
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Third Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-104-119</td>
<td>E-Commerce Web Marketing</td>
<td>3</td>
</tr>
<tr>
<td>10-109-114</td>
<td>Front Office Management</td>
<td>3</td>
</tr>
<tr>
<td>10-109-125</td>
<td>Food Service Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-109-127</td>
<td>Housekeeping/Facilities Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-109-168</td>
<td>Beverage/Dining Room Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
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<td><strong>18</strong></td>
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</tbody>
</table>

Fourth Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>10-109-142</td>
<td>Hospitality Law/Liabil</td>
<td>3</td>
</tr>
<tr>
<td>10-109-151</td>
<td>Special Events Planning</td>
<td>3</td>
</tr>
<tr>
<td>10-109-165</td>
<td>Hospitality Tourism-Intern</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>66</strong></td>
</tr>
</tbody>
</table>

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.

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. 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 of distribution, pricing, promotional decisions for strategy planning.

10-104-119 E-COMMERCE WEB MARKETING ...traditional and electronic direct marketing strategies; methods include search engine management, direct marketing planning, database marketing, catalogs, telemarketing services, print, radio, television and direct mailing.

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.

10-109-113 HOTEL, RESTAURANT AND GAMING MANAGEMENT ...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.

10-109-114 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.

10-109-125 FOOD SERVICE MGMT ...cooking methods, tools/equipment, menu planning, staff scheduling and supervision, controlling costs, facilities maintenance and cleaning, recipe standardization.

10-109-126 FOOD/LODGING COST CONTROL ...purchasing/receiving controls, storing/issuing controls, production controls, monitoring activities, sales controls, beverage controls, labor controls.

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

10-109-142 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.

10-109-151 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.

10-109-165 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.

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

10-145-177 BUSINESS MANAGEMENT-SMALL ...entrepreneurship, success and failure, getting started: sources of capital, location, layout, and legal forms of organization, managing and operating, planning and organizing, directing and monitoring performance, marketing strategy, and administration.

Visit our website at: www.nwtc.edu
Individualized Technical Studies

Program Code 108251

Associate Degree - Full-Time, Part-Time

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

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.

Individualized Technical Studies Degree Has Two Objectives:
• Provide flexibility in programming in order to meet the educational needs of individuals based on their particular career goals.
• Emphasize an individual's career goals that cannot be achieved through enrollment in any single instructional program currently available at the college.

As part of the educational process, each student is required to complete a personal program portfolio outlining his or her career objectives and the courses required to meet those objectives. This student portfolio, together with a completed application for admission, becomes part of the review process used by the NWTC Individualized Technical Studies committee to admit the student for a customized technical studies program.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Completion of all recommended activities to address math and reading skills deficiencies.

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 vary with a minimum of 60 credits.

<table>
<thead>
<tr>
<th>Catalog No.</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-198</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>10-804-110</td>
<td>Elem Algebra w Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-188</td>
<td>Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>10-999-939</td>
<td>Technical Studies-Occupational</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

This program is fully eligible for financial aid.
Explore the possibility of Individual Technical Studies in areas such as:

**Business Management**
NWTC is pursuing a bachelor's degree agreement with Lakeland College for learners who are interested in taking classes offered by NWTC and Lakeland College on the Green Bay campus, or via alternative delivery systems. This opportunity provides maximum flexibility for obtaining a baccalaureate degree in Business Management. Explore other Individual Technical Studies degree opportunities in the business area by creating a customized curriculum specific to your needs. By taking 21 credits of general studies requirements, and a minimum of 39 credits of occupational specific courses, you can obtain a degree that is customized to meet your needs in the world of business.

**Childcare Administration**
Students who complete the 18-credit Child Care Administration Certificate may wish to combine those classes with other classes in the Early Childhood or Supervision associate degree programs for an Individual Technical Studies-Child Care Administration Degree. Courses can be chosen to create a customized curriculum specific to the needs of the individual, with an emphasis on Administration, Special Needs, Infant/Toddler or other areas.

**Entrepreneurship**
In today's world, there is increasing desire among people of all ages to explore, develop, start and run their own businesses. But the knowledge, skills and abilities to start and successfully operate these businesses have never required the wearing of so many hats – and to wear them well. Though the rewards are great, the risks are equally as great, thereby requiring that today's entrepreneurs be more sophisticated and balanced in their planning and preparation. NWTC has carefully considered the needs of an entrepreneur, and have created four distinct Entrepreneurship Certificate tracks to consider. By pairing these certificates with general studies courses, you can create an Individualized Technical Studies Degree in Entrepreneurship.

**Applied Information Technology-Post Baccalaureate**
NWTC recognizes the academic accomplishments of those having previously completed a bachelor's degree. Individuals who are currently employed, and have a specific need for technology skills, can obtain an Individualized Technical Studies Degree. By applying 26 credits of your bachelor's degree to satisfy the general studies and elective requirements, and then taking an additional 34 credits of technology courses, you can obtain this degree and remain current in the constantly changing world of technology.

**Applied General Business-Post Baccalaureate**
NWTC recognizes the academic accomplishments of those having previously completed a bachelor's degree. Individuals who are currently employed, and have a specific need for business skills, can obtain an Individualized Technical Studies Degree. By applying 26 credits of your bachelor's degree to satisfy the general studies and elective requirements, and then taking an additional 34 credits of business courses, you can obtain this degree and remain current in the constantly changing world of business.

For more information about these degrees and other exciting opportunities, please call (920) 498-5431 or (920) 498-6872.

**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 **WRITTEN COMMUNICATION**
...the nature and scope of technical writing, document design, graphics, ethics of the writing process, definition, description, memos, business letters, resume and cover letters, instructions, summaries, and short reports.

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.

10-804-110 **ELEMENTARY ALGEBRA WITH APPLICATIONS**
...traditional algebra topics with applications. Learners develop algebraic problem solving techniques needed for technical problem solving and for more advanced algebraic studies. Topics include linear equations, exponents, polynomials, rational expressions, and roots and radicals. Successful completion of this course prepares learners to succeed in technical mathematics courses. (Prerequisites: Recommended math placement score of: Accuplacer (Arithmetic) = 70 OR TABE Level A math score = 10.9. Note: Recommended that the student has a working knowledge of arithmetic involving fractions and decimals.)

10-809-172 **RACE ETHNIC & DIVERSITY**
...basic American values of justice and equality by teaching vocabulary, history of immigration/conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA.

10-809-188 **DEVELOPMENTAL PSYCHOLOGY**
...defines human development; examines theories; heredity and environmental effects; prenatal development and birth; evaluates biosocial, cognitive psychosocial development through the life span; aging, death, and dying.

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 **INTRODUCTION TO SOCIOLOGY**
...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology.

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Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

Visit our website at: www.nwtc.edu
Individualized Technical Studies - Journeyworker

Program Code 104995

Associate Degree - Full-Time, Part-Time

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

<table>
<thead>
<tr>
<th>Employment Potential</th>
<th>Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Upon graduation from the Individualized Technical Studies-Journeyworker program, a student will have completed 60 credits.</td>
</tr>
</tbody>
</table>

**Required Program Components**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-197</td>
<td>Technical Reporting</td>
<td>3</td>
</tr>
<tr>
<td>10-804-110</td>
<td>Elem Algebra w Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-188</td>
<td>Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
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</tr>
<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
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<tr>
<td>10-999-939</td>
<td>Technical Studies-Occupational</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

We require 39 credits in occupational specific courses. Advanced standing will be granted for the 39 credits with the completion of the apprenticeship if it includes a minimum of 400 hours of paid related training (day school).

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.

Program Description

Individualized Technical Studies-Journeyworker is designed for journeymen 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 Specific courses may be selected from career areas such as accounting, architectural technology, automotive technology, civil engineering technology, corrections science, electronics, financial institutions management, fire protection 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. Please see the Academic Skills Assessment section of this catalog for more information.
- Completion of all recommended activities to address math and reading skills deficiencies.

Northeast Wisconsin Technical College 2006-2007 Catalog
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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 WRITTEN COMMUNICATION ...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.

10-801-197 TECHNICAL REPORTING ...principles of report writing and correspondence, proposals, feasibility reports, progress reports, investigation reports, evaluation reports, meeting reports, memos, and correspondence. (Prerequisite: 10-801-195, Written Communication)

10-804-110 ELEMENTARY ALGEBRA WITH APPLICATIONS ...traditional algebra topics with applications. Learners develop algebraic problem solving techniques needed for technical problem solving and for more advanced algebraic studies. Topics include linear equations, exponents, polynomials, rational expressions, and roots and radicals. Successful completion of this course prepares learners to succeed in technical mathematics courses. (Prerequisites: Recommended math placement score of: Accuplacer (Arithmetic) = 70 OR TABE Level A math score = 10.9. Note: Recommended that the student has a working knowledge of arithmetic involving fractions and decimals.)

10-809-172 RACE ETHNIC & DIVERSITY ...basic American values of justice and equality by teaching vocabulary, history of immigration/conquest, transcultural communication, legal liability, multicultural majority/minority relations, ageism, sexism, gender, sexual orientation, the disabled/ADA.

10-809-188 DEVELOPMENTAL PSYCHOLOGY ...defines human development; examines theories; heredity and environmental effects; prenatal development and birth; evaluates biosocial, cognitive psychosocial development through the life span; aging, death, and dying.

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 INTRODUCTION TO SOCIOLOGY ...the nature and variety of groups; inequality, race and ethnicity; family, population, social integration, and change; collective behavior; politics, economics, religion, education, and the effects of technology.

Visit our website at: www.nwtc.edu
Program Description
Industrial Mechanic prepares students to evaluate machine performance, identify trouble areas, and repair systems.

Program Outcomes
- Interpret the elements of mechanics.
- Use measuring devices.
- Use hand, stationary, and portable power tools.
- Prepare mounting bases for machine installation.
- Identify 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 Academic Skills Assessment 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.
- 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 ensure its proper operation in the various industries.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Lead Mechanic
- Maintenance Supervisor
- Master Mechanic
- Millwright

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
</tr>
<tr>
<td>31-420-314</td>
<td>Machine Shop-Basic</td>
<td>4</td>
</tr>
<tr>
<td>31-421-355</td>
<td>Blueprint Rdg/Sket-Indus</td>
<td>2</td>
</tr>
<tr>
<td>31-462-305</td>
<td>Mechanic 1-Industrial</td>
<td>5</td>
</tr>
<tr>
<td>31-462-306</td>
<td>Mechanic 2-Industrial</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Semester Total</td>
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Second Semester

<table>
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<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-442-365</td>
<td>Welding-Industrial</td>
<td>3</td>
</tr>
<tr>
<td>31-462-307</td>
<td>Mechanic 3-Industrial</td>
<td>5</td>
</tr>
<tr>
<td>31-462-308</td>
<td>Mechanic 4-Industrial</td>
<td>5</td>
</tr>
<tr>
<td>31-462-356</td>
<td>Hydraulics-Industrial</td>
<td>2</td>
</tr>
<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
<td>1</td>
</tr>
<tr>
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</tr>
<tr>
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<td>Total Credits</td>
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</tr>
</tbody>
</table>

This program is fully eligible for financial aid.
Please Note

• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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.

31-442-356 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 sytems. (Prerequisite: 31-462-305, Mechanic 1 Industrial)

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. (Prerequisite: 31-462-306, Mechanic 2-Industrial)

31-462-308 MECHANIC 4-INDUSTRIAL
...belt drives, chain drives, power transmission couplings, gear drives, preventative maintenance. (Prerequisite: 31-462-307, Mechanic 3-Industrial)

31-462-356 HYDRAULICS-INDUSTRIAL
...hydraulic/pneumatic system maintenance, hydraulic pump repair, motors, controls, actuators, and pneumatic components.
### Program Description

The Instructional Assistant Degree is an Associate of Applied Science Degree, which prepares qualified individuals to work directly with students under the supervision of a licensed teacher. The duties include assisting children with math, reading, and writing assignments as well as handling classroom management, clerical and other tasks related to instruction. This program meets Title I and No Child Left Behind paraeducator requirements.

Duties may also include monitoring student activities, assisting with reading or math, correcting papers, tutoring, one-on-one activities and small group facilitation. In addition, instructional assistants work on classroom displays, assist children with computers and media, and supervise various classroom and other school events. Instructional Assistants may be hired to provide instructional services to students from pre-kindergarten through age 21, however, the focus of this program is on preparing graduates to work primarily in elementary and middle level schools.

### Program Outcomes

- Implement instructional strategies to support all student learning.
- Assist all students in maintaining appropriate behaviors in individual and group settings.
- Communicate effectively with students, school staff, and others.
- Carry out school and classroom policies, procedures, and tasks.
- Utilize a variety of instructional media and technology.
- Provide for the health and safety needs of students.
- Assume responsibility for ethical, moral, and legal practices.
- Fulfill role responsibilities of the position in relation to school staff and students.

### Employment Potential

Most job opportunities in this field coincide with the public school system with regard to workdays, holidays, and summers.

A graduate of the program will have potential for employment as an instructional assistant or educational paraprofessional in schools from the pre-kindergarten through high school level. Instructional Assistants work with children in early care and education settings, preschools, elementary schools, middle schools, and high schools. Some instructional assistants work with children with special needs.

**Graduates Work As:** Teacher assistants, instructional assistants, paraeducators, paraprofessionals, specialized aides in reading, math, computers, or special education.

### Typical Activities Include:

- Preparing classroom displays, using computers, supervising classroom and playground activities, giving tests, monitoring students, reading and telling stories, assisting with small and large group activities, managing student behavior, and following teacher lesson plans.

### Requirements for Program Entry

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- A high school diploma or equivalency.
- Demonstrated proficiency in basic skills through a course placement assessment.
- Proper immunizations prior to beginning practicum classes.
- 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 website: [www.dhfs.state.wi.us](http://www.dhfs.state.wi.us)
- It is necessary to show good health as evidenced by a medical examination within one year prior to beginning practicum classes.
- Students should have mastered basic math before entering this program. For a description of basic math, see the Basic Education section of this catalog.

### Curriculum

The Instructional Assistant Associate Degree is a two-year program. Upon graduation, a student will have completed 65 credits. Courses are offered online, and may be taken in any order as long as prerequisites are met. Below is a suggested timeline.

#### First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-522-103</td>
<td>IA: Intro to Educational Prac</td>
<td>3</td>
</tr>
<tr>
<td>10-522-106</td>
<td>IA: Child/Adolescent Dev</td>
<td>3</td>
</tr>
<tr>
<td>10-801-198</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>10-809-188</td>
<td>Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester Total:** 18

#### Second Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-522-101</td>
<td>IA: Teamwork in School Setting</td>
<td>3</td>
</tr>
<tr>
<td>10-522-102</td>
<td>IA: Techniques/Readg/Lang Art</td>
<td>3</td>
</tr>
<tr>
<td>* 10-522-105</td>
<td>IA: Practicum 1</td>
<td>2</td>
</tr>
<tr>
<td>10-522-107</td>
<td>IA: Overview of Special Ed</td>
<td>3</td>
</tr>
<tr>
<td>10-522-111</td>
<td>IA: Guiding &amp; Mening Behavior</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester Total:** 20

#### Third Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-522-104</td>
<td>IA: Technology/Media Rarces</td>
<td>3</td>
</tr>
<tr>
<td>* 10-522-115</td>
<td>IA: Practicum 2</td>
<td>2</td>
</tr>
<tr>
<td>10-522-118</td>
<td>IA: Techniques for Math</td>
<td>3</td>
</tr>
<tr>
<td>10-522-120</td>
<td>IA: Techniques for Science</td>
<td>3</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
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</tbody>
</table>

**Semester Total:** 14

#### Fourth Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-522-122</td>
<td>IA: Adv Readg/Language Arts</td>
<td>3</td>
</tr>
<tr>
<td>10-522-123</td>
<td>IA: Positive Classrm Mgmt Tech</td>
<td>2</td>
</tr>
<tr>
<td>10-522-124</td>
<td>IA: Support Students w Disab</td>
<td>3</td>
</tr>
<tr>
<td>* 10-522-125</td>
<td>IA: Practicum 3</td>
<td>2</td>
</tr>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
</tr>
</tbody>
</table>

**Semester Total:** 13

**Total Credits:** 65

* Required 72 hours in community under supervision of K-12 teacher.

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.

10-522-101 IA: TEAMWORK IN SCHOOL SETTINGS
...group dynamics, school and class policies, liability, confidentiality, legal issues and safety issues as they relate to the role of the instructional assistant as a member of a team.

10-522-102 IA: TECHNIQUES/READING/LANGUAGE ARTS
...instructional assistant’s role in reading/language arts. Work with all children individually and in groups through questioning, listening, guiding techniques. Addresses the use of current classroom materials plus enrichment/support activities.

10-522-103 IA: INTRODUCTION TO EDUCATIONAL PRACTICES
...fundamentals of teaching methodologies, learning styles, factors influencing teaching effectiveness, strategies to meet the needs of all learners, questioning techniques, and basic assessment practices.

10-522-104 IA: TECHNOLOGY/MEDIA RESOURCES
...study and practice strategies of teaching science; assist the classroom teacher in group and individual science activities; explore current science processes, strategies, procedures, assessment options and factors affecting science learning.

10-522-105 IA: PRACTICUM 1
...introduces the student to a pre-kindergarten, kindergarten, elementary, middle or high school classroom. The student will observe children and practice techniques under the direction of the classroom teacher.

10-522-106 IA: CHILD/ADOLESCENT DEVELOPMENT
...growth and development birth through adolescence. Acquaints the learner with the fundamental tasks of physical, motor, perceptual, cognitive social/emotional and language development.

10-522-107 IA: OVERVIEW OF SPECIAL EDUCATION
...classifications of special education, K-12. Studies include causes of special needs/ intervention strategies. Examines key development milestones and how they relate to physical, mental, emotional or social development of children.

10-522-111 IA: GUIDING & MANAGING BEHAVIOR
...guiding children’s behavior to keep them safe/healthy. Includes strategies for improving behavior problems at all levels in the inclusive classroom, on the bus, the playground, and on fieldtrips.

10-522-115 IA: PRACTICUM 2
...further responsibilities in a classroom setting in pre-kindergarten, kindergarten, elementary, middle or high school. The student will work with children or youth under the direction of the classroom teacher. (Prerequisite: 10-522-105, Practicum 1)

19-522-118 IA: TECHNIQUES FOR MATH
...gain hands-on computer and media experience; operate a media equipment. Various school related documents prepared with selected software. Images incorporated into documents using digital cameras and scanners.

10-522-120 IA: TECHNIQUES FOR SCIENCE
...learn techniques to assist classroom teacher in group and individual math activities. Current math practice including manipulatives, problem solving and assessment will be covered within the framework of state/national standards.

10-522-122 IA: ADVANCED READING/LANGUAGE ARTS
...supporting/encouraging children as independent, strategic readers as well as techniques to support children through the writing process. Children’s literature will be integrated throughout the course. (Prerequisite: 10-522-102, Techniques for Reading/Language Arts)

10-522-123 IA: POSITIVE CLASSROOM MANAGEMENT TECHNIQUES
...issues such as divorce, alcoholism, child abuse, youth suicide and gangs on behavior in the classroom. Examines conflict resolution techniques with an emphasis on de-escalation strategies and with an emphasis on prevention. (Prerequisite: 10-522-111, Guiding/Managing Behavior)

10-522-124 IA: SUPPORT STUDENTS WITH DISABILITIES
...strategies to manage the learning environment proactively to prevent behavior problems and promote learning for students with developmental disabilities. (Prerequisite: 10-522-107, Overview of Special Education)

10-522-125 IA: PRACTICUM 3
...putting into practice knowledge/skills learned from program courses under direction/supervision of certified teacher or qualified school personnel. Job search skills will be addressed. Creating a Professional Portfolio will be expected. (Prerequisite: 10-522-115, Practicum 2)
Technical Diploma - Nine Months

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444. Visit the Jewelry Repair and Fabrication website at: www.nwtc.edu/Programs/Jewelry

Program Description
The Jewelry Repair and Fabrication Program prepares students to design, create, and repair jewelry by applying a variety of manufacturing and fabrication processes and techniques.

Program Outcomes
- Perform basic bench jewelry task/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.
- Communicate effectively within the jewelry industry.
- Communicate information technology within the jewelry industry.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment 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. 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 Bench Jeweler, Goldsmith, Stone Setter, Silversmith, Jewelry Sales Representative and Jewelry Designer. Graduates in these occupations repair and/or fabricate jewelry according to customer and/or owner specifications.

Bench Jeweler: repairs jewelry, with fabrication, stone setting, and manufacturing skills.

Goldsmith: works with gold in the repairing and manufacturing of jewelry.

Stone Setter: is a jeweler who has specialized in the setting of stones in mountings, and demonstrates a high skill level, achieved with practice.

Silversmith: works with silver in the repairing and manufacturing of jewelry, utilitarian, and decorative items.

Jewelry Sales Representative: sells retail or wholesale jewelry, tools, and/or equipment.

Jewelry Designer: provides artistic drawings of jewelry designs that meet customer and/or owner approval.

With additional education and/or work experience, graduates may find other opportunities for employment:
- Trade Shop Owner
- Jewelry Department Manager
- Jewelry Store Owner
- Jewelry Equipment Representative
- Hand Engraver
- Certified Gemologist
- Graduate Gemologist
- Appraiser
- Gold Metallurgist

Curriculum
The Jewelry Repair and Fabrication Technical Diploma is a nine-month, two-semester program. Upon graduation, a student will have completed 36 credits.

First Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro OR</td>
<td>1</td>
</tr>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro OR</td>
<td>1</td>
</tr>
<tr>
<td>10-103-151</td>
<td>Micro: PowerPoint-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td>31-441-317</td>
<td>Gemology 1</td>
<td>2</td>
</tr>
<tr>
<td>31-111-310</td>
<td>Jewelry Design/Illustrate</td>
<td>2</td>
</tr>
<tr>
<td>31-441-311</td>
<td>Jewelry Repair 1</td>
<td>3</td>
</tr>
<tr>
<td>31-441-312</td>
<td>Jewelry Manufacturing 1</td>
<td>3</td>
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<tr>
<td>31-441-313</td>
<td>Stone Setting 1</td>
<td>3</td>
</tr>
<tr>
<td>31-441-316</td>
<td>Precious Metals</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>18</strong></td>
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Second Semester
<table>
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<tr>
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<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>31-104-313</td>
<td>Retail Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>31-441-318</td>
<td>Gemology 2</td>
<td>3</td>
</tr>
<tr>
<td>31-441-321</td>
<td>Jewelry Repair 2</td>
<td>3</td>
</tr>
<tr>
<td>31-441-322</td>
<td>Jewelry Mfg Tech 2</td>
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<tr>
<td>31-441-323</td>
<td>Stone Setting 2</td>
<td>3</td>
</tr>
<tr>
<td>31-441-328</td>
<td>Power Engraving</td>
<td>1</td>
</tr>
<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
<td>1</td>
</tr>
<tr>
<td>31-801-386</td>
<td>Communicating Effectively</td>
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<tr>
<td><strong>Total</strong></td>
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</tbody>
</table>

**Semester Total** | **36**

This program is fully eligible for financial aid.
Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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

31-104-313 RETAIL MERCHANDISING
...characteristics of a small business, planning and organizing a new jewelry business, marketing and selling the jeweler's product or service, profit planning and control, and jewelry merchandising.

31-111-310 JEWELRY DESIGN/ILLUSTRATION
...basic drawing skills, use of templates, shading, drawing stones, and basic jewelry design; designing an original piece of jewelry from concept through presentation and promotional illustration.

31-441-311 JEWELRY REPAIR 1...basic jewelry repair, sizing up, down, and rehousing, 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, facricating, electroplating, rubber molds, wax injection models, and production of finished jewelry pieces. (Prerequisite: 31-441-311, Jewelry Repair 1)

31-441-313 STONE SETTING 1...4-prong tiffany setting, bezel setting, 6-prong oval setting, gypsy setting and 2 end cap marquise setting. (Corequisites: 31-441-311, Jewelry Repair 1 and 31-441-312, Jewelry Manufacturing 1)

31-441-316 PRECIOUS METALS...identify: precious metals content, solder determination, gold alloys, metal pricing and precious metal refinement.

31-441-317 GEMOLOGY 1...identify: gemological equipment classification, stone optical/physical property and determination, basic minerals, diamonds and gemstone pricing.

31-441-318 GEMOLOGY 2...identify and evaluate the physical/optical properties of colored gemstones and diamonds through testing and evaluation. (Prerequisite: 31-441-317, Gemology 1)

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)

31-441-328 POWER ENGRAVING...this course provides the learner with the skills to design and do a layout for an engraving and use a power engraver to set stones and create decorative designs. (Prerequisite: Completion of 1st semester)

Visit our website at: www.nwtc.edu
Landscape Horticulture Technician

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Code 100014

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.)

Program Outcomes
- Communicate within the horticulture industry.
- Justify the selection of the appropriate woody plant(s) under the given circumstances for the project at hand.
- Justify the selection of the appropriate herbaceous plant(s) under the given circumstances for the project at hand.
- Execute IPM (Integrated Pest Management).
- Prescribe and execute proper landscape maintenance plans.
- Determine nutritional requirements of turf grasses and ornamentals.
- Analyze soil and its influence on plant life.
- Design and build landscapes.
- Implement a landscape construction design plan.
- Operate a transit.
- Use carpentry hand and power tools.
- Use masonry hand and power tools.
- Safely operate landscape equipment.
- Design and install irrigation equipment.
- Operate computer hardware system.
- Develop and deliver a landscape design presentation.
- Use CAD (Computer Aided Design).
- Receive training for Wisconsin Pesticide Certification exam.
- Propagate and grow horticulture plants.
- Diagnose and treat pest problems on ornamental plants.
- Identify and maintain tropical indoor plants.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- 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 or Interior Plantscaper

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

First Semester
Catalog No. | Description | Credits
--- | --- | ---
10-001-110 | Horticulture-Intro | 3
10-001-158 | Plant-Woody Ornamental | 3
10-001-159 | Flowers-Herbaceous | 3
10-606-112 | Engineering Applications | 1
10-606-127 | Sketching-Landscape | 1
10-801-196 | Oral/Interpersonal Comm | 3
10-809-197 | Contemporary Amer Society | 3

**Semester Total** | **17**

Second Semester

10-001-122 | Plant Nutrition/Fertilizer | 1
10-001-153 | Plant Culture/Soil Fund | 3
10-001-154 | Turf Management | 1
10-001-180 | Landscape Construction 1 | 2
10-606-125 | CAD-Landscape | 2
10-804-110 | Elem Algebra w Apps | 3
10-809-199 | Psychology Of Human Relations | 3

**Semester Total** | **17**

Third Semester

10-001-109 | Landscape Construction 2 | 2
10-001-108 | Plant Propagation | 2
10-001-170 | Pest Management-Integrated | 2
10-001-172 | Landscape Maintenance | 2
10-001-174 | Landscape Design Fund 1 | 3
10-104-191 | Customer Service Mgmt | 3
10-801-195 | Written Communication | 3

**Elective** | **1**

**Semester Total** | **16**

Fourth Semester

10-001-115 | Landscaping-Applied | 4
10-001-182 | Irrigation | 2
10-001-140 | Plant Diagnostic Skills | 2
10-001-184 | Landscape Design 2 | 3
10-001-130 | Plant-Interior | 3
10-809-172 | Race Ethnic & Diversity | 3
10-809-195 | Economics | 3

**Elective** | **3**

**Semester Total** | **18**

**Total Credits** | **68**

Suggested Electives:
- Golf Course Management, 10-001-150
- Landscape Horticulture Internship, 10-001-151
  (10-001-151 Horticulture-Internship is offered in the summer term)
- Spanish-Workplace 1, 10-802-101

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.

10-001-108 PLANT PROPAGATION ...plant propagation and production techniques. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-109 LANDSCAPE CONSTRUCTION 2 ...working with landscape construction methods. (Prerequisite: 10-001-180, Landscape Construction 1)

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. (Prerequisite: total of 30 credits in Landscape/Horticulture classes successfully completed)

10-001-122 PLANT NUTRITION/FERTILIZER ...identification of nutritional needs of turf grasses and ornamentals, special emphasis will be placed on various types of fertilizers and fertilizer programs.

10-001-130 PLANT-INTERIOR ...how to identify indoor tropical plants and blooming plants that are used in interior plantscaping. Includes identification, plant varieties, pests, diseases, and cultural requirements. Also designing with houseplants. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-140 PLANT DIAGNOSTIC SKILLS ...science of making proper diagnoses of plant insects and disease problems and appropriate control strategies. Learn the difference between signs and symptoms and identification of problem plants. (Prerequisite: 10-001-110, Intro to Horticulture)

10-001-153 PLANT CULTURE/SOIL FUNDAMENTALS ...examines the plant, its parts, functions, and relationships to its environment. Particular attention is given to the plant’s interaction with the soil. (Prerequisite: 10-001-110, Intro 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/foliage 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. (Prerequisites: 10-001-110, Intro to Horticulture, 10-001-154 Turf Management)

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. (Prerequisite: 10-001-110 Horticulture-Introduction)

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: 10-001-110, Horticulture-Intro)

10-001-180 LANDSCAPE CONSTRUCTION 1 ...site conditions, landscape tools, design plan implementation. (Prerequisite: 10-606-112, Engineering Applications)

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)

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.

10-606-112 ENGINEERING APPLICATIONS ...basics of a computer system, computer terminology, Windows XP, Microsoft Word, Microsoft Excel, and AutoCAD.

10-606-125 CAD-LANDSCAPE ...terminology of Windows 2000, and AutoCAD. Landscape drawings/design, property lines, contours, site planning, roads and parking lots, planting plans, hard scape symbols, and section view graphics will be covered. (Prerequisite: 10-606-112, Engineering Applications.)

10-606-127 SKETCHING LANDSCAPE ...graphically describes objects without CAD Systems or landscape drawing aids: fundamental components of design process; lettering, geographic construction, orthographic projection, isometric sketching, section views, auxiliary views and dimensioning.

Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.
Leadership Development

**Associate Degree - Accelerated**

Offered throughout the District. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

**Program Description**

Leadership Development 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 to accommodate working adults.

**Program Outcomes**

- Demonstrate effective leadership skills.
- Practice ethical leadership.
- Perform in team environments.
- Facilitate effective meetings.
- Value diversity.
- Demonstrate workplace communication skills.
- Understand the financial components of an organization.
- Utilize performance management techniques.
- Apply project management skills.
- Demonstrate professionalism in management of time, stress and assertiveness.
- Advocate for organizational change.
- Apply continuous improvement processes.
- Positively affect workplace safety.
- Apply current legal workplace standards.
- Demonstrate innovation and creative thinking.

**Requirements for Program Entry**

- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- It is recommended that a student have a minimum of two years work experience and basic computer skills in Word, Excel, and Power Point prior to entering the Leadership Development Program.

**Employment Potential**

This program is designed to attract persons who are already engaged in, or are preparing for, leadership roles in an organization. An employee who is already in a 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 will enhance leadership skills and increase the chance of promotion into a leadership role.

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 interdepartmental communication and work flow.

In addition to traditional leadership or supervisory skills and practices, today’s leaders must understand system(s), variation, and the continuous improvement processes; be facilitators rather than bosses; effectively manage workplace diversity; help organizations adapt to change and encourage innovation; display leadership skills; use critical thinking skills; and use communication skills appropriate to the new team environment.

**Curriculum**

Upon graduation, a student will have completed 66 credits.

**Technical Studies**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-196-164</td>
<td>Supervisors-Personal Skills</td>
<td>3</td>
</tr>
<tr>
<td>10-196-165</td>
<td>Supervision</td>
<td>3</td>
</tr>
<tr>
<td>10-196-166</td>
<td>Human Resource Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-196-167</td>
<td>Team Building/Prob Solve</td>
<td>3</td>
</tr>
<tr>
<td>10-196-168</td>
<td>Legal Issues-Responders</td>
<td>3</td>
</tr>
<tr>
<td>10-196-169</td>
<td>Diversity/Change Management</td>
<td>3</td>
</tr>
<tr>
<td>10-196-170</td>
<td>Ethics</td>
<td>3</td>
</tr>
<tr>
<td>10-196-171</td>
<td>Leadership Development</td>
<td>3</td>
</tr>
<tr>
<td>10-196-172</td>
<td>Managing-Quality</td>
<td>3</td>
</tr>
<tr>
<td>10-196-173</td>
<td>Workplace Innovation</td>
<td>3</td>
</tr>
<tr>
<td>10-196-174</td>
<td>Organizational Development</td>
<td>3</td>
</tr>
<tr>
<td>10-196-175</td>
<td>Safety-Workplace</td>
<td>3</td>
</tr>
<tr>
<td>10-196-176</td>
<td>Project Management</td>
<td>3</td>
</tr>
<tr>
<td>10-196-177</td>
<td>Business Finance/Budgeting</td>
<td>3</td>
</tr>
<tr>
<td>10-196-178</td>
<td>Business Operations</td>
<td>3</td>
</tr>
</tbody>
</table>

**Technical Studies Credits** | 45 |

Learners may select the following accelerated or traditional general studies courses in any sequence while attending technical studies courses.

**General Studies**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td>10-809-196</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-801-198</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
</tbody>
</table>

**General Studies Credits** | 21 |
**Total Credits** | 66 |

* It is suggested that this course be taken toward the end of program courses.

**Note**

The 12 technical studies courses, beginning with a course number 10-196-xxx, are delivered in an Accelerated Learning format, specifically intended for working adults. These courses have a compressed schedule of six weeks each. The competencies learned in an accelerated class are exactly the same as those in a traditional class. Students do much of the learning and assignments outside of class time.

Students may complete three courses totaling nine credits in the same time that one traditional three-credit course is completed. Hence, students may complete the program in 2 to 2 1/2 years.

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.

10-101-184 BUSINESS FINANCE/BUDGETING
...fiscal and monetary aspects of business. Each learner will demonstrate application of business types, cycles, forecasting, budgeting, expense control, and financial statement interpretation relevant to the supervisor as a non-accountant.

10-102-182 BUSINESS OPERATIONS
...information systems, operations management, information technology and marketing. Students will be involved in a capstone project that will give them the opportunity to develop a comprehensive business plan.

10-196-134 LEGAL ISSUES-SUPervisors
...legal practices in both union and non-union 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.

10-196-145 WORKPLACE INNOVATION
...use inventive thinking techniques and innovative methods to improve work processes in multiple workplace environments. Assessing innovation projects using six different points-of-view.

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
...develop more effective organizations through diagnosis, planning, interventions, and improvement via continuous learning about structure, processes, resources, culture, and change in a global environment.

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 front-line leadership role including day-to-day operations, analysis, delegation, controlling, staffing, leadership, problem solving, team skills, motivation, and training.

10-196-192 MANAGING-QUALITY
...developing a personal philosophy of quality, identifying all stakeholder relationships, meeting/exceeding customer expectations, managing a quality improvement project, measuring effectiveness, lean thinking, six sigma, and systems thinking.

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

10-196-199 ETHICS
...ethical points-of-view, morality/ethical theory, utilitarianism, Kantian ethics, justice and the market system, whistleblowing, trade secrets/conflict of interest, privacy, advertising, product safety, corporate social responsibility, international business.

Visit our website at: www.nwtc.edu
Machine Tool Operation

Technical Diploma - One Year

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Machine Tool Operation prepares students to operate machine tools such as engine lathes, milling machines, drill presses, and computer numerical control machines.

Program Outcomes
• Be successfully employed in the trade.
• Safely set up and operate drill presses.
• Safely set up and operate engine lathes.
• Safely set up and operate horizontal and vertical milling machines.
• Safely set up and operate grinding machines.
• Safely set up, operate, and program computer numerical control milling machines.
• Safely set up, operate, and program computer numerical control turning machines.
• Use semi-precision and precision measuring tools to create parts that meet dimensional specifications shown on part prints.
• Accurately read and interpret blueprints.
• Make mathematical calculations related to machine trades.
• Use a computer-aided manufacturing program to create part profiles and machine code.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
• Basic familiarity with Microsoft windows.
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Note
Graduates of the Machine Tool Operation program have the option of continuing with the second year of the CNC Technician (Green Bay campus) or the Machine Tool Technics (Marinette) programs.

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 assemblies 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
Catalog No. Description Credits
10-804-106 Intro to College Math 3
31-420-304 CNC Fundamentals 1 3
31-420-345 Machine Shop 1 4
31-420-346 Machine Shop 2 4
31-420-348 Precision Measurement 1
31-420-358 CNC Set-Ups 1
31-421-352 Blueprint Rdg/Sket-Mach 1 2

Semester Total 18

Second Semester
31-420-347 Cutting Tool Technology 1
31-420-349 CNC Fundamentals 2 3
31-420-356 Machine Shop 3 4
31-420-357 Machine Shop 4 4
31-421-362 Blueprint Rdg/Sket-Mach 2 2
31-422-359 Metallurgy for Machinist 1
31-801-385 Communicating-Writing 1

Semester Total 16
Total Credits 34

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 1...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

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. (Corequisite: 31-420-345, Machine Shop 1)

31-420-347 CUTTING TOOL TECHNOLOGY...tool materials, tool geometry, lathe tools, milling cutters, cutting speed/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. (Corequisite: 31-420-358, CNC Set Ups)

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. (Prerequisite: 31-420-304, CNC Fun 1)

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. (Prerequisite: 31-420-346, Machine Shop 2)

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. (Corequisite: 31-420-356, Machine Shop 3)

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 dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

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 1)

31-422-359 METALLURGY FOR MACHINIST...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.
Machine Tooling Technics

Technical Diploma - Two Years

Offered at the Marinette campus. For information: (715) 735-9361.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
A second year of advanced CNC, tool and die, and electrical discharge machining for graduates of the Machine Tool Operation Program.

Program Outcomes
- 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.

Profile of Incoming Students
- Problem solvers.
- Likes to work with hands.
- Able to organize information.
- Accurate with numbers.
- Able to work with deadlines.
- Creative thinkers.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent. (Equivalency may be established through GED testing or other tests.)
- Basic familiarity with Microsoft windows.
- 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.

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 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, and 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
- Catalog No. Description Credits
- 10-604-106 Intro to College Math 3
- 31-420-304 CNC Fundamentals 1 3
- 31-420-345 Machine Shop 1 4
- 31-420-346 Machine Shop 2 4
- 31-420-348 Precision Measurement 1
- 31-420-358 CNC Set-Ups 1
- 31-421-352 Blueprint Rdg/Sket-Mach 1 2
- Semester Total 18

Second Semester
- 31-420-347 Cutting Tool Technology 1
- 31-420-349 CNC Fundamentals 2 3
- 31-420-356 Machine Shop 3 4
- 31-420-357 Machine Shop 4 4
- 31-421-362 Blueprint Rdg/Sket-Mach 2 2
- 31-422-359 Metallurgy for Machinist 1
- 31-801-385 Communicating-Writing 1
- Semester Total 16

Third Semester
- 31-442-361 Welding-Machine 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
- 32-420-337 CNC Fundamentals 3 3
- Semester Total 18

Fourth Semester
- 10-809-197 Contemporary Amer Society 3
- 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 18
- Total Credits 68

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 1 ...computer controlled milling machines, basic programming operations on computer aided manufacturing (CAM) systems, and fundamental programming of computer numerically controlled (CNC) milling machines. (Prerequisite: Basic Windows Proficiency)

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, power saw operation, drilling machine operation basic theory/operation of engine lathes, basic theory/operation vertical/horizontal milling machines; CNC milling, lathe operation, surface grinder operations. (Corequisite: 31-420-345, Machine Shop 1)

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. (Corequisite: 31-420-358, CNC Set Ups)

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. (Prerequisite: 31-420-304, CNC Fun 1)

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. (Prerequisite: 31-420-346, Machine Shop 2)

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. (Corequisite: 31-420-356, Machine Shop 3)

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 dial offsets, boring bars, and bar feeding. (Corequisite: 31-420-348, Prec Msmt)

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 1)

31-422-359 METALLURGY FOR MACHINIST ...manufacture of iron and steel, basic composition of metals, metal identification, applied heat treating processes.

31-422-361 WELDING-MACHINE TRADES ...oxygenacetylene, brazing, soldering, cutting and hardnessurfacing, beads and types of joints, plasma arc cutting, gas metal arc, tungsten metal arc welding.

32-420-300 MOLD DIE CONSTRUCTION ...squatting plates, boring/milling/turning components, grinding/polishing operations, heat treating, fitting ejector sytems, heating/cooling systems, applying fasteners, engraving/stamping, RAM EDM machining, molding machine setup. (Prerequisite: Completion of 1st and 2nd semester courses)

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. (Prerequisite: Completion of 1st and 2nd semester courses)

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. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-303 TOOLING DESIGN ...interpreting tool and fixturing prints, designing a tool or fixture to be used in a typical manufacturing process. (Prerequisite: Completion of 1st and 2nd semester courses)

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. (Prerequisites: 32-420-303, Tooling Design; 32-420-301, Tool Making; basic Windows proficiency)

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. (Prerequisite: Completion of 1st and 2nd semester courses)

32-420-306 STAMPING DIE CONSTRUCTION ...machine die blocks, punches, punch plates, gages, stops, strippers, die shoes using CNC lathes, CNC mills, CNC wire EDM; assemble components into a working die set; set-up on punch press. (Prerequisites: 32-420-303, Tooling Design; 32-420-301, Tool Making)

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. (Prerequisite: Completion of 1st and 2nd semester courses)

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. (Prerequisite: 31-420-348, Precision Measurement)

32-420-337 CNC FUNDAMENTALS 3 ...basic AutoCAD, CNC production planning, advanced 2D programming, 3D surface programming, computer assisted CNC programming. (Prerequisite: 31-420-349, CNC Fundamentals 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: 32-420-337, CNC Fundamentals 3)
Marketing

Associate Degree - Two Years

Offered at the Green Bay campus, with an 18-month accelerated format also available for individuals with employment experience. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

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

Program Outcomes
- Recommend a pricing plan.
- Evaluate alternative distribution strategies.
- Develop a product and service mix.
- Generate marketing information for effective decision making.
- Apply continuous improvement strategies to solve marketing problems.
- Assess emerging trends in global trade that impact business and marketing.
- Create a personal professional development plan.
- Manage resources and risks to contribute to profitability of the organization.
- Manage marketing within an enterprise.
- Apply technology to marketing and marketing information systems.
- Apply legal and ethical principles to personal, social, and professional behaviors.
- Develop long-term strategic marketing plans.
- Formulate selling strategies.
- Apply effective leadership skills.
- Design a promotion plan.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see Basic Education.

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.

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

Sales Promotion Coordinator: develops a calendar of promotional events, analyzes media utilization, reviews media rates and cost-effectiveness, performs follow-up detail work on promotion implementation, coordinates internal communication, and develops internal promotional support material.

Sales Representative: sells 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 67 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
<td>3</td>
</tr>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-141</td>
<td>Micro: Access-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-104-101</td>
<td>Selling Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-104-110</td>
<td>Marketing Principles</td>
<td>3</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
<td><strong>18</strong></td>
</tr>
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Second Semester

<table>
<thead>
<tr>
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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-104-107</td>
<td>Marketing Comm-Integrated</td>
<td>3</td>
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<tr>
<td>10-104-124</td>
<td>Marketing Presentations</td>
<td>1</td>
</tr>
<tr>
<td>10-104-191</td>
<td>Customer Service Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-104-198</td>
<td>Market Research</td>
<td>3</td>
</tr>
<tr>
<td>10-801-198</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
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<td><strong>Semester Total</strong></td>
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Third Semester

<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>10-101-141</td>
<td>Accounting-Financial</td>
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</tr>
<tr>
<td>10-104-120</td>
<td>Marketing Info Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10-809-197</td>
<td>Contemporary Amer Society</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
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<td><strong>Semester Total</strong></td>
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Fourth Semester

<table>
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<tr>
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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-102-150</td>
<td>Law-Business</td>
<td>3</td>
</tr>
<tr>
<td>10-104-119</td>
<td>E-Commerce Web Marketing</td>
<td>3</td>
</tr>
<tr>
<td>10-104-134</td>
<td>Marketing Internship</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>10-104-140</td>
<td>Marketing Field Study</td>
<td>3</td>
</tr>
<tr>
<td>10-104-189</td>
<td>Sales Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
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<td><strong>Semester Total</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
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</tr>
</tbody>
</table>

Suggested Electives:
- Sports/Entertainment Promotion, 10-104-125
- International Marketing, 10-138-155
- Consumer Behavior, 10-104-176

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.

10-101-141 ACCOUNTING-FINANCIAL ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class deemphasizes the use of debits, credits, journal entries and other accounting procedures.

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.

10-102-158 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.

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. 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.

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

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

10-104-119 E-COMMERCE WEB MARKETING ...traditional and electronic direct marketing strategies; methods include search engine management, direct marketing planning, database marketing, catalogs, telemarketing services, print, radio, television and direct mailing.

10-104-120 MARKETING INFORMATION MANAGEMENT ...opportunity analysis, marketing research processes and data sources, forecasting sales of new and established products, master plan for a marketing strategy, and implementation and control of marketing programs.

10-104-124 MARKETING PRESENTATIONS ...the use of Microsoft PowerPoint as a tool to create effective, professional-looking marketing presentations.

10-104-134 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.

10-104-189 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.

Visit our website at: www.nwtc.edu

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Marketing and Graphic Communications

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Marketing and Graphic Communications trains students in one of three specialized tracks:
Design, Print Production, and Web/Multimedia. Students complete a portfolio review session with the instructional team to advise on track selection during each semester.

Program Outcomes
- Conduct marketing plan.
- Implement promotional strategies.
- Create designs for print and multimedia.
- Assemble a professional portfolio.
- Perform electronic pre-press operations.
- Operate printing equipment.
- Produce four color process and spot color separations.
- Perform digital publishing operations.
- Assemble a professional portfolio.
- Create web pages.
- Produce digital video.
- Implement different multimedia delivery methods.
- Assemble a professional portfolio.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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, Multimedia Specialist, Printing Support Worker/ Customer Service Representative, Public Relations Assistant, Pre-Press Technician, Web Animator or Website Designer.

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.

Multimedia Specialist: creates digital media elements for web, broadcast, and CD/DVD delivery.

Printing Support Worker/Customer Service Representative: 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.

Web Animator: program digital animation for use in web and multimedia delivery.

Website Designer: build digital elements for functional websites.

With additional education and/or work experience, graduates may find other opportunities for employment.
- Account Executive
- Art Director
- Design Supervisor
- Media Buyer

The Track Plan
This plan will help learners choose a career “track” they may want to study. The Track Plan will also aid the learner in choosing the right courses in sequence. It is strongly suggested that the learner take courses in proper sequence to achieve maximum effectiveness of product production.

Track Process:
1. First Semester: All learners will take “common” courses regardless of track they wish to pursue.
2. During each semester, Faculty will conduct portfolio and interview assessments. This will determine if the student is on the right track for his/her career goal.
3. Second Semester: All learners will continue to take “common” courses plus a course that will reflect their choice of the track they wish to pursue.
4. Third & Fourth Semester: Learners complete courses as outlined in the Track Plan. Each track represents 67 credits.

Note
- Graphic Workstations class is a corequisite to any first semester course in the Marketing & Graphic Communications Track. It is also suggested that learners, regardless of age or professional experience, should take the Graphic Workstations if they are not familiar with the Macintosh OS X version of the operating system. This course is designed to help familiarize the learner with the Macintosh computer environment used in all three tracks.
- It is also recommended that learners take Graphic Design Portfolio and Marketing Communications Internship courses in their last semester.

This program is fully eligible for financial aid.
### Curriculum

The Marketing and Graphic Communications Associate Degree is a two-year, four-semester program. Learners are required to meet with instructional team to advise on track selection after the first semester. Upon graduation, a student will have completed 67 credits.

<table>
<thead>
<tr>
<th>First Semester All Students Must Complete:</th>
<th>Students select ONE of the following tracks:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalog No.</strong></td>
<td><strong>Print Production</strong></td>
</tr>
<tr>
<td>10-111-103 Graphical Workstations</td>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
<td>10-111-120 Macintosh Publishing</td>
<td>3</td>
</tr>
<tr>
<td>10-111-161 Macintosh Illustration</td>
<td><strong>Credits</strong></td>
</tr>
<tr>
<td>10-204-110 Publishing Technologies</td>
<td>3</td>
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<tr>
<td>10-801-195 Written Communication</td>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td><strong>Credits</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Second Semester All Students Must Complete:</strong></td>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td>10-111-101 Macintosh-Image Editing</td>
<td>1</td>
</tr>
<tr>
<td>10-111-125 Graphic Reproduction Tech</td>
<td><strong>Credits</strong></td>
</tr>
<tr>
<td>10-111-159 Graphic Workstations-Adv</td>
<td>3</td>
</tr>
<tr>
<td>10-111-162 Typography Design/Paper</td>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td><strong>Credits</strong></td>
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<tr>
<td><strong>Third Semester All Students Must Complete:</strong></td>
<td><strong>Total Credits for Print Production Track</strong></td>
</tr>
<tr>
<td>10-111-170 Graphic Design Portfolio</td>
<td>67</td>
</tr>
<tr>
<td>10-801-196 Oral/Interpersonal Comm</td>
<td><strong>Design</strong></td>
</tr>
<tr>
<td>10-804-123 Math with Business Apps</td>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
<td>10-809-199 Psychology Of Human Relations</td>
<td>10-111-121 Marketing 2-Visual Design</td>
</tr>
<tr>
<td><strong>Credits</strong></td>
<td>3</td>
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<tr>
<td><strong>Fourth Semester All Students Must Complete:</strong></td>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td>10-111-141 Marketing Comm Internship</td>
<td>10-111-110 Macintosh Image Editing-Adv</td>
</tr>
<tr>
<td>10-801-197 Technical Reporting</td>
<td>3</td>
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<tr>
<td>10-809-172 Race Ethnic &amp; Diversity</td>
<td><strong>Elective</strong></td>
</tr>
<tr>
<td>10-809-195 Economics</td>
<td><strong>Credits</strong></td>
</tr>
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<td><strong>Credits</strong></td>
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</tbody>
</table>

**Web/Multi-Media**

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-111-150 Web Graphic Design 3</td>
<td>10-111-152 Web Animation Design 3</td>
<td>10-111-151 Website Design 3</td>
</tr>
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<td>Credits</td>
<td>Credits</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Suggested Electives for all tracks:**
- Adv. Image Editing, 10-111-110
- Portable Document Publish, 10-111-163
- Web Animation Programming, 10-111-172

**Note**

If a student completes a track in this program, they are eligible to receive the certificate of the same title.

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Descriptions for Marketing & Graphic Communications are on next page ...
Course Descriptions
These courses provide an opportunity for students to develop the knowledge, skills, and understanding required for employment in this field.

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

10-104-191 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.

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat); scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print or the internet. An introduction to manipulating bitmap images. (Prerequisite: 10-111-103, Graphic Workstations)

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

10-111-110 MACINTOSH IMAGE EDITING-ADVANCED ...photoshop’s tool box, layers, paths, channels, scans, color separations, photo retouching. Web pages, Web graphics, Web safe colors, HTML code, Adobe Dimensions, image mapping and interactive capabilities of software. (Prerequisite: 10-111-103, Graphic Workstations)

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. (Corequisite: 10-111-103, Graphic Workstations)

10-111-120 MACINTOSH PUBLISHING ...develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements. (Corequisite: 10-111-103, Graphic Workstations)

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. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...basic process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-141 MARKETING COMMUNICATIONS INTERNSHIP ...classroom experience with on-the-job training concluding with an evaluation by employer and instructor. Course should be taken during the final semester.

10-111-142 GRAPHIC REPRODUCTION-ADVANCED ...various techniques used to print four-color process images including traditional and electronic separations; trapping, creating pdf’s, proofing techniques; color correction; preparing files for flexo, gravure, and screen printing. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-150 WEB GRAPHIC DESIGN ...prepare graphics for the web including optimization techniques, transparent gifs, background images, image maps, slices and rollovers. Code web pages using XHTML and CSS using table and frame page layouts. (Prerequisites: 10-111-101, Macintosh-Image Editing; 10-111-103, Graphic Workstations)

10-111-151 WEBSITE DESIGN ...(Adobe Go-Live) format text for websites, build DHTML animation, internet based forms, cascading style sheets, CSS, web publishing, browser testing, and basic site management. (Prerequisites: 10-111-103, Macintosh Illustration and 10-111-150, Web Graphic Design; 10-111-103, Graphic Workstations)

10-111-152 WEB ANIMATION DESIGN ...(Macromedia Flash) vector animation, create, import source material, incorporate into flash movies, use Stage and Timeline, motion, shape-tweening, add sound to buttons, use Action Script, and test flash. (Prerequisite: 10-111-161, Macintosh Illustration)

10-111-154 MACINTOSH-MULTIMEDIA AUTHORING ...media types including audio, video and graphics to create original commercial, educational and entertainment productions for delivery to broadcast, CD/DVD and web. Final Cut Pro, LiveType and Photoshop software. (Prerequisite: 10-111-101, Macintosh-Image Editing)

10-111-159 GRAPHIC WORKSTATIONS-ADVANCED ...operation, upgrading and maintaining systems used in graphic design and multimedia industries; OSX (Ten) operating system, directory structure, file management, application support; cross platform file usage and delivery. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-161 MACINTOSH ILLUSTRATION ...create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images. (Corequisite: 10-111-103, Graphic Workstations)

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. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-164 PAGE LAYOUT-ADV ...Solve cross platform layout issues, create advanced press layouts, research additional page layout programs. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-170 GRAPHIC DESIGN PORTFOLIO ...define portfolios, evaluate current projects, produce artifacts for portfolio, and raise/strike portfolio exhibit. Course should be taken during the final semester. (Prerequisite: 10-111-103, Graphic Workstations)
Please Note

• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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

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

10-204-120 PUBLISHING OPERATIONS-OFFSET
...detailed overview of the flexographic printing and offset lithographic printing processes; learners integrate classroom press operating experiences with interactions with industry. (Prerequisite: 10-111-103, Graphic Workstations)

10-204-122 DIGITAL PUBLISHING SYSTEMS
...printing management process, related management skills, leadership skills, quality assessment techniques, and production schedules. (Prerequisite: 10-111-103, Graphic Workstations)

10-804-123 MATH WITH BUSINESS APPS ...real numbers; basic operations; proportions/one variable; percents, simple/compound interest; annuity; apply math concepts to purchasing/buying process, selling process; and basic statistics with business/consumer applications. (Prerequisite: Recommended math placement test score of: Accuplacer (Arithmetic) score = 57 OR TABE Level A math score = 9.5)
Program Description
Mechanical Design Technology prepares learners for employment as machine designers. Mechanical Design Technicians assist Product Engineers by detailing sections of the design. Detailing includes selecting standard parts such as bearings, couplings, and fasteners; sizing machine members; and preparing necessary documentation for detail and assembly drawings. Most of the work is done on a computer.

Program Outcomes
- Draw principal, auxiliary, and sectional views.
- Use mechanical, architectural, metric, and civil scales to plot scalable prints of drawings.
- Research information on the Internet.
- Maintain files on a personal computer.
- Operate word processing and spreadsheet programs.
- Analyze displacement, velocity, and acceleration of machine members.
- Analyze stresses caused by forces acting on bodies at rest.
- Analyze forces acting on bodies at rest.
- Sketch orthographic and isometric views.
- Use catalogs or Internet sites to select standard components in machine design.
- Dimension mechanical drawings according to conventional ANSI Y14 standards and GDT standards.
- Draw weldments and sheetmetal layouts.
- Draw CAM layouts.
- Calculate gear train ratios.
- Create basic models using a parametric modeler.
- Design simple mechanical devices.
- Draw detail and assembly drawings.
- Prepare electrical/electronic documentation for machine control.
- Construct ladder diagrams for motor controls documentation.
- Display attitudes consistent with the profession.
- Work in an organized manner, documenting work performed.
- Use Machinery's Handbook as a reference source.
- Apply various manufacturing methods and techniques as they relate to mechanical design.
- Identify the characteristics of metal, polymers, ceramics and composites.
- Evaluate material options for machine components.
- Select materials for machine components.

Employment Potential
A graduate of the program will have the potential for employment as a 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

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- A high school background in mathematics, science, and industrial education.
- High school diploma or equivalent.
- The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

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

First Semester
Catalog No. | Description | Credits
--- | --- | ---
10-606-111 | Mechanical Design-Exploring | 1
10-606-113 | CAD | 2
10-606-119 | Sketching-Technical | 2
10-606-157 | SolidWorks Fund and Drawings | 2
10-801-196 | Oral/Interpersonal Comm | 3
10-804-118 | Interm Algebra w Apps | 4
10-809-199 | Psychology Of Human Relations | 3

Semester Total | 17

Second Semester
Catalog No. | Description | Credits
--- | --- | ---
10-442-153 | Prototype Metal Fabrication | 2
10-606-103 | 2D CAD - Advanced | 3
10-606-122 | CAD-Fabrication & Assembly | 2
10-606-126 | Geometric Dimension/Tolerance | 2
10-804-196 | Trigonometry w Apps | 3
10-806-154 | General Physics 1B | 4

Semester Total | 16

Third Semester
Catalog No. | Description | Credits
--- | --- | ---
10-420-115 | CNC-Mechanical Design | 3
10-606-135 | Machine Members-Strength | 5
10-606-139 | CAD-Electrical Control | 3
10-606-158 | SolidWorks Advanced | 3
10-606-159 | Materials Science | 3

Semester Total | 17

Fourth Semester
Catalog No. | Description | Credits
--- | --- | ---
10-419-170 | Fluid Power | 3
10-606-141 | Design Problems | 3
10-606-143 | Mechanisms | 3
10-801-195 | Written Communication | 3
10-809-172 | Race Ethnic & Diversity | 3

Elective | 3

Semester Total | 18
Total Credits | 68

Suggested Electives:
- SolidWorks-Intermediate, 10-606-163
- SolidWorks-Assemblies/Drawings, 10-606-164
- SolidWorks Sheet Metal, 10-606-165
- SolidWorks Loft and Surface, 10-606-166

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.

10-419-170 FLUID POWER ...an introductory study of hydraulic and pneumatic principles as applied to system design: circuit sizing and design, fluid power components, operations, and applications. (Prerequisites: 10-806-154, General Physics 1; 10-804-118, Intern Algebra w/Apps)

10-420-115 CNC-Mechanical Design ...2 axis CNC; 3 axis CNC; importing files; mold making.

10-442-153 PROTOTYPE METAL FABRICATION ...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication.

10-606-103 2D CAD-ADVANCED ...primary and successive auxiliary views; intersections and developments; intersections of planes and dihedral angles; piercing points; angles between lines and planes; revolutions; vectors. (Prerequisite: 10-606-113, CAD.)

10-606-111 MECHANICAL DESIGN-EXPLORING ...philosophy/organization/procedure of the Mechanical Design Technology Program, brief overview of the engineering profession by involvement in a design project to illustrate basic concepts/methods of machine design

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

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-FABRICATION & ASSEMBLY ...sheet metal drawings as applied to brackets, enclosures & guarding; welding drawings; threads & fasteners; stock components; working drawing documentation. (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. (Prerequisites: 10-606-113, CAD; 10-606-157, Solidworks Fundamentals and Drawings OR 10-606-162, Solidworks Fundamentals)

10-606-135 MACHINE MEMBERS-STRENGTH ...force analysis, moments, truss and frame analysis, simple stress, properties of materials, joint design, centroids and moments of inertia, beam design, shafting design, combined stresses, columns. (Prerequisites: 10-806-154, General Physics 1; 10-804-196, Trigonometry w Apps)

10-606-139 CAD-ELECTRICAL CONTROL ...draw 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, document standard practices, project management and teamwork.. (Prerequisites: 10-606-126, Geometric Dimensioning/Tol; 10-606-135, Machine Members-Strength; 10-606-122, CAD Fabrication & Assembly)

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-Fabrication & Assembly; 10-806-154, General Physics 1)

10-606-157 SOLIDWORKS FUNDAMENTALS AND DRAWINGS ... terminology, software operation and interface basics, creating basic models, creating casting and forging models, revolved features, SolidWorks drawing environment and full dimensioned orthographic drawings. (Corequisite: 10-606-119, Sketching-Technical; Prerequisite: Familiarity with Windows file management)
Medical Assistant

Technical Diploma - One Year

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description

The Medical Assistant program prepares individuals to assist physicians in their offices or other medical settings. Medical assistants perform a wide range of duties. The medical assistant is responsible for medical and surgical asepsis, taking vital signs, assisting the physician with examinations and surgery, administering EKGs and administering medications. The business/administrative duties include patient reception, appointment making, record keeping, filing, bookkeeping, insurance handling, typing medical correspondence and transcription and microcomputer applications. Laboratory functions include specimen collection, performance of basic laboratory tests and microscopic work. Graduates find jobs as medical assistants, medical office assistants, medical laboratory assistants, phlebotomists, receptionists, medical insurance clerks and electrocardiogram technicians.

Program Outcomes

- Perform clerical functions.
- Perform bookkeeping procedures.
- Prepare special accounting entries.
- Apply principles of medical asepsis.
- Perform specimen collection.
- Perform diagnostic testing.
- Process insurance claims.
- Provide patient care.
- Communicate effectively.
- Apply legal and ethical concepts.
- Instruct patients.
- Perform medical office operational functions.
- Demonstrate professionalism in a health care setting.

Clinical Experience

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 a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

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 caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhrs.state.wi.us

Accreditation

The Medical Assistant Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAAHEP), on recommendation of the Curriculum Review Board of the American Association of Medical Assistants’ Endowment (AAMAE).

Employment Potential

A graduate of this program will have the potential for employment as a Certified Medical Assistant, Medical Insurance Clerk, EKG Technician, Medical Laboratory Assistant, Medical Records Clerk, Medical Office Assistant, Phlebotomist, and Receptionist.

Certified Medical Assistant: prepares a patient for examination or treatment, takes vital signs, performs simple lab tests, performs electrocardiograms, performs administrative functions, and assists the physician as needed within clinical procedures.

Medical Insurance Clerk: processes insurance claims on a computer.

EKG Technician: operates and maintains electrocardiographic machines, records the heart’s electrical activity, and provides data for diagnosis and treatment of heart ailments by physicians.

Medical Laboratory Assistant: performs simple laboratory procedures and venipunctures to collect blood specimens.

Medical Records Clerk: handles all patient medical records in areas such as progress notes and pulls records of patients on a daily basis.

Medical Office Assistant: performs a variety of duties related to bookkeeping, typing, filing, record keeping, customer relations, telephoning, general correspondence, appointments, and patient accounts.

Phlebotomist: obtains blood specimens by venipuncture and capillary puncture.

Receptionist: greets patients, schedules appointments, and answers telephone.

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

- Medical Laboratory Technician
- Medical Office Manager
- Medical Transcriptionist

Board/Certification Examinations

Graduates are eligible to take the national examination for Certified Medical Assistants.

Felons are not eligible for the AAMA Certification Examination unless the Certifying Board grants a waiver based on one or more of the mitigating circumstances listed in the Disciplinary Standards. CMAs who are currently employed or seeking employment may not use the CMA 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)

Flexible Learning Option: A part-time evening/weekend track is available. This option is scheduled over a four-semester period, including one summer. For details, please refer to the Part-time Medical Assistant brochure.

Requirements for Program Admission

Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years. Candidates must submit transcripts demonstrating completion of the following with the application:

- A high school diploma or equivalent
- Typing proficiency of 30-words per minute (mandatory preadmission typing test to be taken at NWTC Assessment Center)

Curriculum

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-103-111</td>
<td>Micro: Windows-Intro</td>
<td>1</td>
</tr>
<tr>
<td>* 10-501-101</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>* 31-509-301</td>
<td>MA Administrative Procedures</td>
<td>1</td>
</tr>
<tr>
<td>* 31-509-302</td>
<td>Human Body in Health/Disease</td>
<td>3</td>
</tr>
<tr>
<td>* 31-509-303</td>
<td>MA Laboratory Procedures 1</td>
<td>2</td>
</tr>
<tr>
<td>* 31-509-304</td>
<td>MA Clinical Procedures 1</td>
<td>4</td>
</tr>
<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
<td>1</td>
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<tr>
<td>31-801-386</td>
<td>Communicating Effectively</td>
<td>1</td>
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<tr>
<td><strong>Semester Total</strong></td>
<td><strong>16</strong></td>
<td><strong>Total Credits</strong></td>
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Second Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
<tr>
<td>* 31-509-305</td>
<td>MA Laboratory Procedures 2</td>
<td>2</td>
</tr>
<tr>
<td>* 31-509-306</td>
<td>MA Clinical Procedures 2</td>
<td>3</td>
</tr>
<tr>
<td>* 31-509-307</td>
<td>Medical Office Insur/Finance</td>
<td>2</td>
</tr>
<tr>
<td>* 31-509-308</td>
<td>Pharmacology-Allied Health</td>
<td>2</td>
</tr>
<tr>
<td>* 31-509-309</td>
<td>Med Law Ethics/Professionalism</td>
<td>1</td>
</tr>
<tr>
<td>* 31-509-310</td>
<td>Medical Assistant Externship</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
<td><strong>16</strong></td>
<td><strong>Total Credits</strong></td>
</tr>
</tbody>
</table>

* No final grade lower than “C” is acceptable in any course marked with an asterisk. A student may repeat that particular course to achieve a “C” or better final grade in order to continue in or graduate from this program.

This program is fully eligible for financial aid.

Requirements for Program Entry

- Meet established Academic Skills Assessment program benchmarks. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
- Attend Mandatory orientation.
- Complete physical examination within three months before entering program or beginning medical affiliation and maintain current immunization information.
- Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card on a two-year renewal cycle to comply with affiliating agency requirements.
- Complete an American Heart Association Emergency First Aid course.
Course Descriptions

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

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

31-509-301 MEDICAL ASSISTANT ADMINISTRATIVE PROCEDURES ...introduces medical assistant students to office management and business administration by scheduling appointments, filing, record keeping, performing telephone and reception duties and communicating effectively with patients and other medical office staff. (Prerequisite: Accepted into Medical Assistant Program)

31-509-302 HUMAN BODY IN HEALTH/DISEASE ...Students learn to recognize the causes, signs, and symptoms of diseases of the major body systems as well as the diagnostic procedures, usual treatment, prognosis and prevention of common diseases.

31-509-303 MEDICAL ASSISTANT LABORATORY PROCEDURES 1 ...introduces medical assistant students to routine laboratory procedures while following laboratory safety requirements and federal regulations testing. (Prerequisite: Accepted into Medical Assistant Program)

31-509-304 MEDICAL ASSISTANT CLINICAL PROCEDURES 1 ...introduces students to the clinical procedures performed in the medical office setting. Students perform basic examining room skills including screening, vital signs, patient history, minor surgery and patient preparation for routine and specialty exams. (Prerequisite: Accepted into Medical Assistant Program)

31-509-305 MEDICAL ASSISTANT LABORATORY PROCEDURES 2 ...prepares students to perform laboratory procedures commonly performed in the ambulatory care setting under the supervision of a physician. Students perform phlebotomy, immunology, hematology and chemistry laboratory procedures. (Prerequisite: 31-509-303, Medical Assist Lab Prod 1)

31-509-306 MEDICAL ASSISTANT CLINICAL PROCEDURES 2 ...prepares students to perform patient care skills. Students perform clinical procedures including administering medications, assisting with minor surgery, performing an electrocardiogram, assisting with respiratory testing, and maintaining clinical equipment. (Prerequisite: 31-509-304, Medical Assistant Clinical Procedures 1)

31-509-307 MEDICAL OFFICE INSURANCE/FINANCE ...introduces students to health insurance and finance in the medical office. Students perform bookkeeping procedures, apply managed care guidelines, and complete insurance claim forms. Students use medical coding and managed care terminology to perform insurance-related duties. (Prerequisites: 31-509-301, Medical Assistant Admin Prod; 10-501-101, Medical Terminology)

31-509-308 PHARMACOLOGY-ALLIED HEALTH ...introduces students to classifying medications into correct drug categories and applying basic pharmacology principles. Students apply basic pharmacodynamics to identifying common medications, medication preparation, and administration of medications used by the major body systems.

31-509-309 MEDICAL LAW ETHICS/PROFESSIONALISM ...prepares students to display professionalism and perform within ethical and legal boundaries in the health care setting. Students maintain confidentiality, examine legal aspects of the medical record, perform risk management procedures, and examine legal and bioethical issues.

31-509-310 MEDICAL ASSISTANT EXTERNSHIP ...requires students to integrate and apply knowledge and skills from all previous medical assistant courses in actual patient care settings. Learners perform medical assistant administrative, clinical, and laboratory duties under the supervision of trained mentors. (Prerequisite: Successful completion of all Medical Assistant courses)
**Native American Gaming-Casino Management**  
**Program Code 101097**

**Associate Degree – Two Years**

Offered at the Green Bay campus. For information: (920) 498-5444.  
Toll-free: (800) 422-NWTC, ext. 5444.

**Program Description**

The Native American Gaming-Casino Management program prepares students to operate and manage the dynamics of the gaming industry including direct customer interaction, regulatory compliance, and security/surveillance/maintenance aspects of both electronic and table games. Specific applications of the ethical, psychological and socio-cultural impacts associated with gaming as a form of recreation and entertainment will be analyzed.

**Program Outcomes**

- Communicate effectively in written and verbal forms.
- Value diversity in the workplace.
- Perform mathematical calculations for business applications.
- Apply management processes and techniques to the gaming industry, including: planning, organizing, staffing, budgeting, controlling and evaluation.
- Integrate responsibility, accountability, and authority in human resource issues.
- Analyze current business practices/issues and their application to gaming industry.
- Demonstrate positive workplace attributes for personal/career success.
- Understand the historical base and contemporary issues in tribal/gaming laws.
- Ensure gaming regulations are adhered to, followed, and reported.
- Apply legal and ethical principles to personal and professional behaviors.

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

**Employment Potential**

Program graduates may work in a variety of areas and levels within a gaming/casino organization depending upon their selection of course clusters. A graduate of the program will have the potential for employment as a Casino Operations Specialist, Gaming Security Officer, Mid-Level Gaming Operation Management and Gaming Surveillance Operator.

**Casino Operations Specialist:** Responsible for providing leadership and overseeing daily operations in a casino gaming operation environment.

**Gaming Security Officer:** Ensure a safe and enjoyable environment on the floor for customers and employees, perform day to day operations of gaming protection duties, responsibilities and tasks.

**Mid-Level Gaming Operation Management:** Supervision of officers and/or operators, schedule day to day assigned duties, ensure gaming regulations are adhered to, followed and reported.

**Gaming Surveillance Operator:** Observe and report breaches of security and gaming operations to proper personnel.

**With additional education and/or work experience, graduates may find other leadership opportunities within gaming employment.**

**Native American Gaming Certificates**

Students who complete courses in the Gaming Associate Degree are also eligible for Certificates. Each semester qualifies students to receive a certificate:

- **First Semester:** Foundations of Gaming Leadership
- **Second Semester:** Gaming Customer Relationships Management
- **Third Semester:** Gaming Operations Certificate
- **Fourth Semester:**
  - With the addition of two courses (10-504-131 Professional Communications and 10-504-118 Protective Services-Technical Reporting), students receive the Gaming Security and Surveillance Certificate.

**Curriculum**

The Native American Gaming-Casino Management Associate Degree is a two-year program. Upon graduation, a student will have completed 66 credits. Courses may be taken in any order, however, below is a suggested timeline.

**First Semester**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-109-185</td>
<td>Gaming Regulations</td>
<td>3</td>
</tr>
<tr>
<td>10-109-187</td>
<td>Introduction to Casino Gaming</td>
<td>3</td>
</tr>
<tr>
<td>10-196-164</td>
<td>Supervisors-Personal Skills</td>
<td>3</td>
</tr>
<tr>
<td>10-196-189</td>
<td>Team Building/Prob Solve</td>
<td>3</td>
</tr>
<tr>
<td>10-196-191</td>
<td>Supervision</td>
<td>3</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
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**Second Semester**

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<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-102-158</td>
<td>Business-Intro</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-102-182</td>
<td>Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>10-103-121</td>
<td>Micro: Word-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-103-131</td>
<td>Micro: Excel-Intro</td>
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</tr>
<tr>
<td>10-103-141</td>
<td>Micro: Access-Intro</td>
<td>1</td>
</tr>
<tr>
<td>10-104-191</td>
<td>Customer Service Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-109-186</td>
<td>Casino Marketing</td>
<td>3</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-804-123</td>
<td>Math with Business Apps</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
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**Third Semester**

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<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-109-188</td>
<td>Slots Management</td>
<td>3</td>
</tr>
<tr>
<td>10-109-198</td>
<td>Table Games Management</td>
<td>3</td>
</tr>
<tr>
<td>10-196-193</td>
<td>Human Resource Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>10-809-172</td>
<td>Race Ethnic &amp; Diversity</td>
<td>3</td>
</tr>
<tr>
<td>10-809-196</td>
<td>Economics</td>
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**Fourth Semester**

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<th>Credits</th>
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<tr>
<td>10-504-124</td>
<td>Gaming Protection</td>
<td>3</td>
</tr>
<tr>
<td>10-504-125</td>
<td>Surveillance Operations</td>
<td>3</td>
</tr>
<tr>
<td>10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
<td>3</td>
</tr>
<tr>
<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>66</strong></td>
</tr>
</tbody>
</table>

**Suggested Electives:**

- 10-109-192 Casino Operations-Internship  
  OR
- 10-109-193 Casino Operations-Field Study
- 10-504-131 Professional Communication
- 10-504-142 Constitutional Law
- 10-504-118 Protective Services-Technical Reporting

This program is fully eligible for financial aid.
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444. Descriptions of courses not found on this page can be found in the back of this catalog.

**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.

**10-102-182 BUSINESS OPERATIONS**
...information systems, operations management, information technology and marketing. Students will be involved in a capstone project that will give them the opportunity to develop a comprehensive business plan.

**10-103-121 MICRO: WORD-INTRODUCTION**
...word processing basics including creating, revising, formatting, and printing; sections, tabs, multiple-page numbering; manipulating text; creating headers/footers; creating and formatting tables, creating charts; outlines, and web pages; and applying styles. Requires Windows experience.

**10-103-131 MICRO: EXCEL-INTRODUCTION**
...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

**10-103-141 MICRO: ACCESS-INTRODUCTION**
...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

**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.

**10-109-185 GAMING REGULATIONS**
...provides an in-depth look at regulatory systems used in gaming; information on regulatory framework, Indian Gaming regulations, and Federal Governments involvement in this relationship.

**10-109-186 CASINO MARKETING**
...an in-depth study of gaming marketing techniques used in gaming both locally and nationwide. Emphasis on casino marketing department, staffing, organization, duties and procedures.

**10-109-187 INTRODUCTION TO CASINO GAMING**
...management techniques used in gaming. Emphasis on casino organization, staffing, labor/management relations both for the mid-level casino supervisor and the casino executive.

**10-109-188 SLOTS MANAGEMENT**
...emphasis on casino organization, staffing and labor/management relations both for the mid-level casino supervisor and the casino executive. Practical application of technicians, floor, shift managers duties is stressed.

**10-109-198 TABLE GAMES MANAGEMENT**
...basic understanding of rules and regulations for roulette, slots, blackjack and Caribbean stud games and understanding the various personnel roles, duties and their functions.

**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.

**10-196-189 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.

**10-196-191 SUPERVISION**
...application of strategies and transition to a contemporary front-line leadership role including day-to-day operations, analysis, delegation, controlling, staffing, leadership, problem solving, team skills, motivation, and training.

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

**10-504-124 GAMING PROTECTION**
...Basic gaming sheets, slots and table games, observe suspicious activity and breaches of policy procedure.

**10-504-125 SURVEILLANCE OPERATIONS**
...Basic understanding of camera systems and operations, policy and procedures for the various geographical areas of the casino and observation techniques.

Visit our website at: www.nwtc.edu
Network Specialist (IT)  
Program Code 101502

Associate Degree - Two Years

Offered at the Green Bay campus. First year only offered on the Marinette campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Network Specialist teaches students to design, install, configure, and maintain computer networks.

Program Outcomes
- Design a local area network (LAN) per specifications.
- Construct a local area network using the required physical components.
- Install network hardware including 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 Academic Skills Assessment 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).

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 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

Note
Critical skills required to be successful in each core program course are listed on the program website at: http://network.nwte.edu/courseskillreq.htm
Learners should review this information carefully before enrolling in a course.

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

First Semester
Catalog No.  Description Credits
10-103-141 Micro: Access-Intro 1
10-106-145 Keyboarding 1
10-150-163 Network: Structures 3
10-150-174 Network: Client Operating Sys 3
10-154-150 Micro Hardware-Intro 3
10-801-195 Written Communication 3
10-804-133 Math & Logic 3

Semester Total 17

Second Semester
Catalog No.  Description Credits
10-107-194 Micro Documentation 2
10-150-157 Network: UNIX/LINUX-Intro 3
10-150-165 Network: MS Server/Networking 3
10-150-168 Network: Structures 2 3
10-801-196 Oral/Interpersonal Comm 3
10-809-195 Economics 3

Semester Total 17

Third Semester
Catalog No.  Description Credits
10-150-145 Network: Security Fundamentals 3
10-150-186 Network: Admin-Inter 4
10-150-188 Network: Applications 4
10-809-172 Race Ethnic & Diversity 3
10-809-199 Psychology Of Human Relations 3

Semester Total 17

Fourth Semester
Catalog No.  Description Credits
10-107-144 Information Tech-Emerging 2
10-150-170 Network: Capstone 2
10-150-196 Network: Admin-Adv 4
10-150-198 Network: Internship 3
10-809-166 Intro to Ethics: Theory & App Elective 3

Semester Total 17

Total Credits 68

Suggested Electives:
Project/Change Mgmt 1-MS Project, 10-107-151
Project/Change Mgmt 2-Project Mgr, 10-107-152
Project/Change Mgmt 3-Case Studies, 10-107-153
Network: Firewall Install/Configuration, 10-150-146
Network Management & Troubleshooting, 10-150-150
Internet Security And Firewalls, 10-150-154
Network: UNIX-Intermediate, 10-150-155
Network: Incident Reporting, 10-150-169
Micro-Programming-Visual Basic, 10-152-163
Micro Hardware-Advanced, 10-154-158

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.

10-103-141 MICRO: ACCESS-INTRODUCTION  
...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.  

10-106-145 KEYBOARDING  
...keyboarding at a personal productivity level, correct posture, touch typing on the alpha-numeric keyboard using an interactive software package running on a microcomputer. No experience required.  

10-107-144 INFORMATION TECHNOLOGIES- EMERGING  
...current issues and trends in the computer science area; possible topics: the Internet, visual programming, multimedia, computer security and ethics, and client/server.  

10-107-194 MICRO DOCUMENTATION  
...students plan document 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. (Prerequisite: 10-801-195, Communication-Written or equivalent)  

10-150-145 NETWORK: SECURITY FUNDAMENTALS  
...network security fundamentals to include desktop and server systems.  

10-150-157 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.  

10-150-163 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.  

10-150-165 NETWORK: MS SERVER/NETWORKING  
...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.  

10-150-168 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.  

10-150-170 NETWORK: CAPSTONE  
...individual case studies to review and consolidate the knowledge and skills gained in previous classes. Course is intended to be taken during the student’s last semester.  

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

10-150-186 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.  

10-150-188 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.  

10-150-196 NETWORK: ADMINISTRATION- ADVANCED  
...intranet website planning, implementation of Web pages using a variety of development tools, introduction to the principles of electronic commerce.  

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Note  

Critical skills required to be successful in each core program course are listed on the program website at:  
http://network.nwtc.edu/courseskillreq.htm  
Learners should review this information carefully before enrolling in a course.
Nursing Assistant

Technical Diploma-120 Hours, 3 Credits

Offered throughout the District. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

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

Program Outcomes
- Apply for competency testing to be placed on the Wisconsin Nurse Aide Registry.
- Obtain employment as a Nursing Assistant or Home Health Aid.
- 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.
- 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.
- Requirements for program entry must be completed prior to the start of program.
- Students must take an Academic Skills Assessment or ACT exam (must be within three years, except if you have a two or four year degree) and attain program benchmarks (see the Academic Skills Assessment section of this catalog for more information) before admission to the program. Academic Skills Assessment benchmarks must be met prior to submitting application or remediation must be submitted with application.
- Please see the Academic Skills Assessment section of this catalog for more information on required reading skill inventory.
- Be at least 16 years old.
- Have a medical examination satisfactorily completed within one year before entering program.
- Provide documentation of immunization history.
- Access to high speed Internet is helpful.
- Push, pull, lift, and/or support up to 50 pounds of weight.

Employment Potential
A graduate of this 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.

Note
- All textbook, workbook and video assignments must be complete before attending clinical.
- This course is completed within six weeks and will meet at least two days a week.
- Classroom and clinical attendance is mandatory.
- Individuals with abuse records may not be eligible for employment.

Clinical Experience
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us

Curriculum
The Nursing Assistant Technical Diploma is a 120-hour program consisting of 40 hours of lab, 40 hours of video viewing, and 40 hours of clinical in a health care facility. Upon graduation, a student will have completed three credits. Orientation will be done during the first class.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>30-543-355</td>
<td>Nursing Assistant-Basic</td>
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<td>Total Credits</td>
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</tr>
</tbody>
</table>

This program is not eligible for financial aid.
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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

30-543-355 NURSING ASSISTANT-BASIC ...basic nursing/personal care skills, principles of communication skills, client rights and team work with other caregivers under the supervision of a licensed nurse.
Nursing-Associate Degree

Program Code 105431

Associate Degree - Two Years

Offered at the Green Bay, Marinette, and Sturgeon Bay campuses and West Regional Learning Center (first year). For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information Sturgeon Bay: (920) 746-4900. For information at the West Regional Learning Center: (715) 524-2418. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Graduates plan, provide, and evaluate patient care. They act as liaisons between physicians, other health care workers, and the patient. They supervise other health care providers.

Program Outcomes
• Adhere to professional standards of practice within legal, ethical, and regulatory frameworks of the registered nurse.
• Use effective communication skills.
• Assess health of individuals, families, and groups within the context of the community.
• Make clinical decisions to assure safe and accurate nursing care.
• Provide safe caring interventions with diverse populations.
• Collaborate with others to respond to the needs of individuals, families, and groups across the health-illness continuum.
• Manage care to facilitate continuity within and across health care settings.

Clinical Experiences
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us

Accreditation
The Nursing-Associate Degree program is accredited by: National League for Nursing Accrediting Commission (NLNAC) 61 Broadway, New York, NY 10006 (212) 363-555 X153 FAX (212) 812-0390

The Nursing-Associate Degree program is approved by: Wisconsin Board of Nursing Dept. of Regulation & Licensing 1400 East Washington St. P.O. Box 8935, Madison, WI 53708-8935 (608) 266-2112

Employment Potential
A graduate of this 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 health care 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.

Board/Certification Exams
Graduates are eligible to take the Wisconsin State Board Examination for licensure as a Registered Nurse (RN).

After completion of second semester, students are eligible to take the NCLEX-PN for licensure as a Practical Nurse.

Requirements for Program Admission
Prior to submitting an application, candidates must have taken an Academic Skills Assessment or ACT assessment within the last three years. Academic Skills Assessment program benchmarks, or minimum standard composite score of 18 on the ACT, must be met prior to submitting an application. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation. Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• One year of Biology and Chemistry, passed with a “C” grade or better. If in high school, “C” in two semesters of each.
• All students must successfully complete a DHFS approved Nursing Assistant course prior to submitting an application to the program.

Priority Admission Statement
Applicants with documentation of completion of General Anatomy and Physiology, with a “C” or better, will receive priority standing among that year’s applicant pool.

Requirements for Program Entry
• Attend mandatory orientation.
• Complete physical examination within three months before entering program and maintain current immunization information.
• Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.
• Prior to entering the first semester nursing courses (10-543-101, 10-543-102, 10-543-103, 10-543-104) completion of 10-806-186: Intro to Biochemistry with a “C” grade or better.

Flexible Learning Option
A part-time evening/weekend track is available. This option is offered in a 10-semester, four-year period, including three summers. For details, please refer to the Part-time Nursing-Associate Degree brochure.

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

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-543-101</td>
<td>ADN -Nursing Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>10-543-102</td>
<td>ADN-Nursing Skills</td>
<td>3</td>
</tr>
<tr>
<td>10-543-103</td>
<td>ADN -Nursing Pharmacology</td>
<td>2</td>
</tr>
<tr>
<td>10-543-104</td>
<td>ADN-Nursing/Intro Clin Pract</td>
<td>2</td>
</tr>
<tr>
<td>10-801-195</td>
<td>Written Communication</td>
<td>3</td>
</tr>
<tr>
<td>10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
<td>4</td>
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<tr>
<td>10-809-188</td>
<td>Developmental Psychology</td>
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Second Semester

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<tbody>
<tr>
<td>10-543-105</td>
<td>ADN-Nursing Health Alterations</td>
<td>3</td>
</tr>
<tr>
<td>10-543-106</td>
<td>ADN-Nursing Health Promotion</td>
<td>3</td>
</tr>
<tr>
<td>10-543-107</td>
<td>ADN-Nursing Clin Lifespan</td>
<td>2</td>
</tr>
<tr>
<td>10-543-108</td>
<td>ADN-Nursing/Intro Clin Mang</td>
<td>2</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>10-806-179</td>
<td>Adv Anatomy &amp; Physiology</td>
<td>4</td>
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Third Semester

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<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-543-109</td>
<td>ADN-Nursing Comp Health Alt</td>
<td>1</td>
</tr>
<tr>
<td>10-543-110</td>
<td>ADN-Nursing Mental Hlth Con</td>
<td>2</td>
</tr>
<tr>
<td>10-543-111</td>
<td>ADN-Nursing Intermediate Clin</td>
<td>3</td>
</tr>
<tr>
<td>10-543-112</td>
<td>ADN-Nursing Advanced Skills</td>
<td>1</td>
</tr>
<tr>
<td>10-806-197</td>
<td>Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>10-809-198</td>
<td>Intro to Psychology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
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Fourth Semester

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<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>10-543-113</td>
<td>ADN-Nursing Comp Alter</td>
<td>3</td>
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<tr>
<td>10-543-114</td>
<td>ADN-Nursing Mgmt Concepts</td>
<td>2</td>
</tr>
<tr>
<td>10-543-115</td>
<td>ADN-Nursing Adv Clin Practice</td>
<td>3</td>
</tr>
<tr>
<td>10-543-116</td>
<td>ADN-Nursing Clin Transition</td>
<td>2</td>
</tr>
<tr>
<td>10-809-196</td>
<td>Intro to Sociology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Semester Total</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>70</td>
</tr>
</tbody>
</table>

*No final grade lower than a “C” is acceptable in the nursing or natural science courses marked with an asterisk. 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.

Note
• 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.
• Licensed Practical Nurses may receive advanced standing for nursing courses in the first year of the program. Introduction to AD Nursing (10-543-120) must be taken concurrent with second-year nursing courses.

Call (920) 498-5430 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.

10-543-101 NURSING FUNDAMENTALS ...focuses on basic nursing concepts that the beginning nurse will need to provide care to diverse patient populations. Current and historical issues impacting nursing will be explored. (Prerequisite: Accepted into Nursing Program; Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-102 NURSING SKILLS ...focuses on development of clinical skills and physical assessment across the lifespan. Includes mathematical calculations and conversions. Basic medication administration, techniques related to obtaining a health history. (Prerequisite: Accepted into Nursing Program; Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-103 NURSING PHARMACOLOGY ...introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisite: Accepted into Nursing Program; Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-104 NURSING: INTRO TO CLINICAL PRACTICE ...basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisite: Accepted into Nursing Program: Corequisite: 10-806-177, Gen Anatomy & Physiology)

10-543-105 NURSING HEALTH ALTERATIONS ...provides an opportunity to study conditions affecting different body systems and apply therapeutic nursing interventions. It will also introduce concepts of leadership, team building, and scope of practice. (Prerequisite: Completion of 1st semester coursework; Corequisite: 10-543-108, Nursing: Intro to Clin Manag; 10-806-179, Advanced Anatomy & Physiology)

10-543-106 NURSING HEALTH PROMOTION ...will cover topics related to health promotion in the context of the family; reproductive issues, pregnancy, labor and delivery, post-partum, the newborn, and the child. (Prerequisite: Completion of 1st semester coursework; Corequisite: 10-543-107, Nursing: Clin Care Life Span; 10-806-179, Advanced Anatomy & Physiology)

10-543-107 NURSING CLINICAL CARE ACROSS LIFESPAN ...clinical experience applies nursing concepts and therapeutic interventions to clients across the lifespan. Provides an introduction to concepts of teaching and learning. Extending care to include the family is emphasized. (Prerequisite: Completion of 1st semester coursework; Corequisites: 10-543-105, Nursing Health Alterations; 10-806-179, Advanced Anatomy & Physiology)

10-543-108 NURSING: INTRO TO CLINICAL MANAGEMENT ...clinical experience applies nursing concepts and therapeutic nursing interventions to groups of clients. It also provides an introduction to leadership, management, and team building. (Prerequisites: Completion of 1st semester coursework; Accepted into Associate Degree Nursing Program; Corequisites: 10-543-105, Nursing Health Alterations; 10-806-179, Advanced Anatomy & Physiology)

10-543-109 NURSING COMPLEX HEALTH ALTERATIONS 1 ...caring for clients with alterations in musculoskeletal, cardiovascular, respiratory, endocrine, and hematologic systems as well as clients with fluid/electrolyte and acid-base imbalance, and alterations in comfort. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-110 NURSING MENTAL HEALTH COMMUNITY CONCEPTS ...topics related to the delivery of community and mental health care. Needs of individualism families, and groups will be addressed. Attention will be given to diverse and at-risk populations. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-111 NURSING INTERMEDIATE CLINICAL PRACTICE ...clinical course develops the RN role when working with clients with complex health care needs. A focus of the course is developing skills needed for managing multiple clients and priorities. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-112 NURSING ADVANCED SKILLS ...focuses on the development of advanced clinical skills. Content includes advanced IV skills, blood product administration, chest tube systems, basic EKG interpretation and nasogastric/feeding tube insertion. (Prerequisite: Completion of 2nd semester coursework; Corequisites: 10-809-198, Intro to Psychology; 10-806-197, Microbiology)

10-543-113 NURSING COMPLEX HEALTH ALTERATIONS 2 ...topics related to clients with alterations in immune, neuro-sensory, musculoskeletal, GI, hepatobiliary, renal/urinary, and reproductive systems. Also high risk perinatal and newborns, ill child, critical, life-threatening situations. (Prerequisite: Completion of 3rd semester coursework)

10-543-114 NURSING MANAGEMENT/ PROFESSIONAL CONCEPTS ...covers nursing management and professional issues related to the role of the RN. Emphasis is placed on preparing for the RN practice. (Prerequisite: Completion of 3rd semester coursework)

10-543-115 NURSING ADVANCED CLINICAL PRACTICE ...advanced clinical course requires the student to integrate concepts from all previous courses in the management of groups of clients facing complex health alterations. (Prerequisite: Completion of 3rd semester coursework; Corequisite: 10-543-113, Nursing Complex Health Alt 2)

10-543-116 NURSING CLINICAL TRANSITION ...promotes relatively independent clinical decisions, delegation, and works collaboratively with others to achieve client and organizational outcomes transitioning to the role of the graduate nurse. (Prerequisites: Completion of 3rd semester coursework; 10-543-113, Nursing Complex Health Alterations 2; 10-543-115, Nursing Advanced Clinical Practice; Corequisite: 10-543-114, Nursing Management Concepts)
Office Assistant

Technical Diploma - One Year

Offered at the Green Bay and Marinette campuses. Offered part-time at the Sturgeon Bay campus. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. Toll-free: (800) 422-NWTC, ext. 5444.

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, office procedures, and keyboarding. Credits earned in the program can be applied to the Administrative Assistant Associate Degree program.

Program Outcomes
- Keyboard efficiently using correct techniques.
- Communicate business messages effectively.
- Produce effective business documents.
- Apply organizational skills to prioritize and manage workflow.
- Use appropriate technology to perform office tasks.
- Present researched information.
- Integrate appropriate software to produce business documents.
- Demonstrate professionalism in the business environment.

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
  - Basic math.
  - A keyboarding skill of 20 wpm using the TOUCH method is recommended.

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

<table>
<thead>
<tr>
<th>Employment Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>A graduate of this program will have the potential for employment as an Office Assistant, File Clerk, Receptionist, Transcriptionist, or Data Entry/Typist.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Office Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>File Clerk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Works in offices with a great volume of records in which indexing, cross-referencing, filing, retrieving, and charging-out records are important job functions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receptionist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operates simple to complex telephone systems; handles customer relations; and assists with other office work such as filing, typing, processing mail, and scheduling.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transcriptionist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serves as a word processor using transcription equipment and word processing software.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Entry/Typist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enters data and produces correspondence, reports, and documents needed by the office using word processing software.</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Office Assistant Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 35 credits.</td>
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<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>Catalog No.</td>
</tr>
<tr>
<td>10-103-111</td>
</tr>
<tr>
<td>10-103-121</td>
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<tr>
<td>10-103-122</td>
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<td>10-106-103</td>
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<tr>
<td>10-106-153</td>
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<td>10-804-123</td>
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<tr>
<td><strong>Semester Total</strong></td>
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</table>

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<th>Second Semester</th>
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<tr>
<td>Catalog No.</td>
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<tr>
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<tr>
<td>10-103-132</td>
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<tr>
<td>10-103-160</td>
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<td>10-106-126</td>
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<td>10-106-132</td>
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<td>10-106-142</td>
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<td>10-106-172</td>
</tr>
<tr>
<td>10-801-195</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
</tr>
</tbody>
</table>

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; creating headers/footers; creating and formatting tables, creating charts; outlines, and web pages; and applying styles. Requires Windows experience.

10-103-122 MICRO: WORD-PART 2 ...
advanced word processing features including merge, sort and select; text flow; footnotes/endnotes, images, shapes, WordArt; macros; shared documents; master and subdocuments; specialized tables and indexes; forms; and sharing data. Requires strong introductory Word skills.

10-103-131 MICRO: EXCEL-INTRODUCTION ...
creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-132 MICRO: EXCEL-PART 2 ...
advanced formatting techniques and functions, working with templates, collaborating with multiple Excel users, Excel's database features and analysis tools. Requires prior completion of Excel Intro.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...
prepare handouts and slide shows using templates, animations, transitions, sounds, and hyperlinks. Requires Windows experience.

10-103-160 MICRO: OUTLOOK ...
use email, distribution lists, signatures, attachments, and task lists; schedule appointments and meetings using the calendar; flag, filter, sort, and merge contacts, use message delivery options; archive messages and folders.

10-106-103 INFORMATION PROCESSING PRINCIPLES ...
information processing cycle and workflow, terminology, hardware, software, ergonomics, security, systems, Internet, and career opportunities.

10-106-107 KEYBOARD-SPEED BUILDING 1 ...
skill development on the alphabetic keyboard using analytic/diagnostic software. Minimum alphabetic speed developed is 40 wpm in a 3-minute timing. Requires touch keyboarding at 30 wpm.

10-106-112 KEYBOARD-SPEED BUILDING 2 ...
skill development on the alphabetic keyboard, top-row number keys, and ten-key pad using analytic/diagnostic software. Minimum alphabetic speed developed is 45 wpm in a 5-minute timing. Requires touch keyboarding at 40 wpm.

10-106-126 ADMINISTRATIVE BUSINESS PROCEDURES 1 ...
today’s global business environment, including time management using PIM software, flexible work arrangements, processing mail, meeting coordination, copiers and fax machines, and application of common business communication using appropriate formats. Requires Windows, intermediate Word, PowerPoint, and Outlook experience.

10-106-128 ADMINISTRATIVE BUSINESS PROCEDURES 2 ...
...skill development in Proofreading/Editing Essentials 1.

10-106-131 PROOFREADING/EDITING ESSENTIALS 1 ...
will develop skills for identifying and correcting grammar, spelling, punctuation, capitalization, numbers, and abbreviations for creating error-free business documents.

10-106-132 PROOFREADING/EDITING ESSENTIALS 2 ...
apply advanced proofreading and editing skills in electronic and printed business documents using Proofomatic techniques, reference manuals, and resources. Multitasking and decision-making skills are enhanced through transcription and proofreading. (A passing grade in Proofreading/Editing Essentials 1 is a strong recommendation for success.)

10-106-142 SOFTWARE PROJECTS ...
...applying Windows XP and Word 2003 features to manage and format business documents while exercising decision-making skills and enhancing keyboarding in a team setting. Requires Windows and intermediate Word background.

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

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

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
A Legal Assistant or Paralegal is a person qualified by education, training, or work experience who is employed or retained by a lawyer, law office, corporation, governmental agency, or other entity who performs specifically designated substantive legal work for which a lawyer is responsible. Paralegals are not authorized to practice law. Remediation will be required for those students not meeting the program benchmarks.

Program Outcomes
- 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 Academic Skills Assessment section of this catalog for more information.
- Ability to use Windows and Microsoft Word proficiently.
- Successful completion of reading and language assessment prior to admission.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Credentials
The Paralegal Program is approved by the American Bar Association (ABA) and is also a member of the American Association for Paralegal Education.

American Bar Association
541 North Fairbanks Ct.
Chicago, IL 60611.
Phone: (312) 988-5617

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

With additional education and/or work experience, graduates may find other opportunities for employment.
- Law Office Administrator
- Law Office Manager
- Paralegal Supervisor
- Paralegal Instructor
- Corporate Compliance Officer
- Regulatory Specialist
- Research Analyst

A Special Note to Learners Holding a Bachelor's Degree: Learners holding a bachelor’s degree from an accredited institution have the option of pursuing a Post-Baccalaureate Certificate for Paralegal. For more information, contact Donna Meves at (920) 498-6872.

A Special Note to Those Learners Taking Online Courses: The ABA requires each learner to take a minimum of four legal specialty courses in a live, synchronous "real time" format.

* NWTC requires you to take
Civil Litigation 1 (10-110-102) and
Civil Litigation 2 (10-110-103), and two other legal specialty courses of your choice, from NWTC in a live, synchronous, "real time" format. NWTC has designated the following courses as legal specialty courses.

Required Legal Specialty Courses:
* 10-110-101 Civil Litigation 1
* 10-110-102 Civil Litigation 2
* 10-110-103 Civil Litigation 3
* 10-110-104 Legal Research
* 10-110-105 Legal Writing
* 10-110-106 Legal Aspects/Business Org.

Curriculum Notes:
+ A grade of "C" or better must be achieved in 10-110-101 Paralegal Intro/Legal Ethics in order to proceed with core Paralegal courses (those numbered 10-110-XXX).

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.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-110-101</td>
<td>Paralegal Intro/Legal Ethics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-801-175</td>
<td>English Composition 1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-809-191</td>
<td>Critical Thinking-Philos</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Semester Total</strong></td>
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<td></td>
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<tr>
<td>Second Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-101-102</td>
<td>Accounting-Intro</td>
<td>3</td>
<td></td>
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<tr>
<td>10-106-141</td>
<td>Information Process-Legal</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>* 10-110-102</td>
<td>Civil Litigation 1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-110-104</td>
<td>Legal Research</td>
<td>3</td>
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<tr>
<td>10-110-110</td>
<td>Real Estate Law</td>
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<td><strong>Semester Total</strong></td>
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<td>Third Semester</td>
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<td></td>
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<tr>
<td>* 10-110-103</td>
<td>Civil Litigation 2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10-110-107</td>
<td>Legal Aspects/Business Org</td>
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<td>10-110-106</td>
<td>Law-Family</td>
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<td>* 10-110-114</td>
<td>Administration of Estates</td>
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<td>* 10-801-198</td>
<td>Speech</td>
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<td>10-809-199</td>
<td>Psychology Of Human Relations</td>
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<td>10-110-105</td>
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<td>Paralegal Internship</td>
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<td>10-110-143</td>
<td>Paralegal Field Study</td>
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<td>10-110-160</td>
<td>Law-Employment</td>
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<td>* 10-809-166</td>
<td>Intro to Ethics: Theory &amp; App</td>
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<td>Race Ethnic &amp; Diversity</td>
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<td>Economics</td>
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** Legal specialty courses must take 4 of 7 courses below:
10-110-106 Family Law
10-110-110 Real Estate Law
10-110-114 Administration of Estates
10-110-115 Administrative Law
10-110-122 Creditor/Debtor Relations
10-110-160 Employment Law
10-110-168 Paralegal Criminal Procedures

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.

10-106-141 INFORMATION PROCESSING-LEGAL ...various computerized methods used to open new client files; and organizing and maintaining documentation necessary for computerized litigation, document creation, and law office administration.

10-110-101 PARALEgal INTRO/LEGAL ETHICS ...introduction to the legal profession: ethics, court system, legal research, and roles of the paralegal.

10-110-102 CIVIL LITIGATION 1 ...civil procedure in state and federal courts, the litigation process with emphasis on the paralegal function in investigating and gathering information, and preparing pleadings and motions. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

10-110-103 CIVIL LITIGATION 2 ...civil litigation including discovery, settlement, trial, and appellate procedure. (Prerequisites: 10-110-101, Paralegal Intro/LEGAL Ethics; 10-110-102, Civil Litigation 1)

10-110-104 LEGAL RESEARCH ...research terminology; sources of law; primary/secondary authority; mandatory/persuasive authority; citation form; factual/legal issues; effective research strategies; validating and updating results; computer-assisted legal research; Internet research. (Prerequisite:10-110-101, Paralegal Intro/LEGAL Ethics)

10-110-105 LEGAL WRITING ...Process writing; writing fundamentals; proofreading; in-house documents; legal correspondence; analytical writing; synthesizing cases/authorities; briefing cases; legal memoranda; persuasive writing; drafting pleadings, motions, legal briefs; drafting discovery documents (Prerequisites: 10-110-101, Paralegal-Intro; 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/LEGAL Ethics)

10-110-107 LEGAL ASPECTS/BUSINESS ORGANIZATIONS ...formation, operation, and dissolution of types of business organizations, and substantive and procedural law involving business organizations. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

10-110-110 REAL ESTATE LAW ...law of real property, forms of ownership, land description methods, public and private encumbrances, real estate contracts, deeds, financing sources, title evidence, and the closing process. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

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/LEGAL Ethics)

10-110-115 ADMINISTRATIVE LAW ...the paralegal's role in preparation and representation of cases before administrative agencies, structure and authority of administrative agencies, procedures, and substantive state and federal administrative law. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

10-110-122 CREDITOR/DEBTOR RELATIONS ...legal rights of creditors and debtors, collection of outstanding debts, execution of judgments, small claims court, bankruptcy procedures, and filing bankruptcy petitions and schedules. (Prerequisite:10-110-101, Paralegal Intro/LEGAL Ethics)

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/LEGAL Ethics)

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/LEGAL Ethics)

10-110-160 LAW-EMPLOYMENT ...analyze federal and state laws governing employment relationships, job discrimination, sexual harassment, work place privacy, labor standards, and human resource management. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

10-110-168 PARALEgal CRIMINAL PROCEDURES ...substantive and procedural criminal law, the role of paralegals in both the prosecution and defense of criminal actions, emphasis on investigations and preparation of legal documents. (Prerequisite: 10-110-101, Paralegal Intro/LEGAL Ethics)

10-801-175 ENGLISH COMPOSITION 1 ...grammar, mechanics, writing process, essay parts, paragraph types, audience, purpose, paragraph development, topic sentences, thesis statements, critical reading and writing, MLA/APA documentation, research techniques, in-class/ timed writing, and revision skills.

10-809-191 CRITICAL THINKING-PHILOSOPHY ...critical and creative thinking, problem solving, perception, believing and knowing, language as a thinking tool, concepts, meaningful patterns, facts, inferences and judgements, arguments and reasoning.
Paramedic - Emergency Medical Technician

Program Code 305312

Technical Diploma - One Year
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Paramedic-Emergency Medical Technician students perform emergency patient care and advanced life support in the pre-hospital setting, transporting injured and ill patients to hospital emergency departments.

Successful completion of the Paramedic program prepares and entitles the student to take the National Registry licensing examination for EMT-Paramedics. A graduate is licensed as a paramedic only after successful completion of the licensing examination.

Program Outcomes
• 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.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Be currently licensed as an EMT in the State of Wisconsin.
• 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.
• 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 website: www.dhfs.state.wi.us
• 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
Catalog No.  Description Credits
30-531-321 Paramedic Clinical 1 4
30-531-324 Paramedic Lab 1 2
30-531-330 Paramedic Principles 1A 3
30-531-331 Paramedic Principles 1B 3

Semester Total 12

Second Semester
Catalog No.  Description Credits
30-531-323 Paramedic Clinical 2 4
30-531-325 Paramedic Lab 2 2
30-531-332 Paramedic Principles 2A 3
30-531-333 Paramedic Principles 2B 3

Semester Total 12
Total Credits 24

Note
Strongly Recommended Course:
It is strongly recommended that the students who are non-affiliated with a paramedic service take this course in order to fulfill the course requirements and successfully complete the program.

Catalog No.  Description Credits
30-531-326 Paramedic-Clinical 3 3

Lecture Hours: 216

This program is fully eligible for financial aid.
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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

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.

30-531-323 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)

30-531-330 PARAMEDIC PRINCIPLES 1A ...roles and responsibilities of the paramedic, human systems and patient assessment, shock and fluid therapy, pharmacology, assessment/management of respiratory and cardiovascular emergencies. (Corequisite: 30-531-331, Paramedic Principles 1B)

30-531-331 PARAMEDIC PRINCIPLES 1B ...roles and responsibilities of the paramedic, human systems and patient assessment, shock and fluid therapy, pharmacology, assessment/management of respiratory and cardiovascular emergencies.

30-531-332 PARAMEDIC PRINCIPLES 2A ...cardiovascular, neurologic, obstetric and gynecologic, soft tissue, musculoskeletal, acute medical, pediatric, and psychiatric emergencies; operational aspects of EMS. (Corequisite: 30-531-333, Paramedic Principles 2B)

30-531-333 PARAMEDIC PRINCIPLES 2B ...cardiovascular, neurologic, obstetric and gynecologic, soft tissue, musculoskeletal, acute medical, pediatric, and psychiatric emergencies; operational aspects of EMS.
Physical Therapist Assistant

Associate Degree - Two Years Plus One Summer

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444.

Program Code 105241

Program Description
The Physical Therapist Assistant program educates students to carry out patients’ rehabilitation programs under the supervision of a licensed physical therapist.

Program Outcomes
• 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 activities addressing quality of service delivery.
• 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 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.

Requirements for Program Admission
Candidates submitting an application must take an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• One year of Algebra with a “C” or better (or attain program benchmark for Algebra on the Academic Skills Assessment).
• One year of Chemistry OR Physics, or equivalent, with a grade of “C” or better. If in High School, “C” in two semesters of each.

Priority Admission
Applicants with documentation of completion of General Anatomy and Physiology, with a “C” or better, will receive priority standing among that year’s applicants.

Employment Potential
A graduate of this program will have the potential for employment as a Physical Therapist Assistant. The State of Wisconsin does require a license to practice as a physical therapist assistant.

Physical Therapist Assistant
assists the physical therapist in the provision of physical therapy, performs physical therapy interventions and related tasks, carries out operational functions, makes modifications within the scope of the established plan of care, performs documentation and assessments under the direction and supervision of the physical therapist.

Fieldwork Experiences
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to fieldwork experiences. Students may be expected to travel distances and participate in weekend rotations.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us

Students are required to complete an American Heart Association Health Care Provider CPR course prior to Fieldwork Experiences. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.

Board/Certification Examinations
Graduates are eligible to take the Physical Therapist Assistant Certification Exam through the National Physical Therapy Examination Service (NPTE).

Requirements for Program Entry
• Meet established Academic Skills Assessment program benchmarks, or achieve minimum standard composite score of 20 on the ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the relevant area.
• Attend spring program orientation.
• Complete physical examination within three months before entering program and maintain current immunization information.

Suggested Skills for Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Accreditation
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

Curriculum
The Physical Therapist Assistant Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 68 credits.

First Semester

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<td>10-524-112</td>
<td>Physical Therapist Asst-Intro</td>
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<td>10-524-114</td>
<td>Physical Therapist Asst 1</td>
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<td>10-524-118</td>
<td>PT-Athology Concepts</td>
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<td>10-806-116</td>
<td>Physics-PTA</td>
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<td>10-806-177</td>
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<td>10-524-122</td>
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<td>10-801-195</td>
<td>Written Communication</td>
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<td>Physical Therapist Assist-Peds</td>
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<td>10-809-190</td>
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<td>10-524-145</td>
<td>PTA-Clinical Problems 1</td>
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<td>10-524-147</td>
<td>PTA Fieldwork-2A</td>
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<td>10-524-148</td>
<td>PTA Fieldwork-2B</td>
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<td>10-524-149</td>
<td>PTA-Ethical Decision Making</td>
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* 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.

+ PTA-Ethical Decision Making (10-524-149) and PTA-Healthcare Systems (10-524-136) must be completed with a grade of “C” or better prior to beginning PTA Fieldwork 2A (10-524-147) and PTA-Fieldwork 2B (10-524-148).

Suggested Electives:
PTA-Sports Medicine/Athletics, 10-524-146
PTA-Fitness Testing/Prescription, 10-524-151

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.

10-524-104 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, Physical Therapist Asst 3; 10-524-133, PTA-Pediatrics)

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; 10-806-116, Physics; 10-524-118, PTA Pathology Concepts; 10-806-177, Anatomy & Physiology-General; Corequisite: 10-806-179, Anatomy & Physiology Advanced)

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. (Prerequisites: Accepted into Physical Therapist Assistant program Corequisite: 10-806-177, Anatomy & Physiology-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. (Prerequisite: Accepted into Physical Therapist Assistant program)

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; 10-806-116, Physics; 10-524-118, PTA Pathology Concepts; 10-806-177, Anatomy & Physiology-General; Corequisite: 10-806-179, Anatomy & Physiology Advanced)

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

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

10-524-134 PTA-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 PTA-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)

10-524-144 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 PTA-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 PTA-ETHICAL DECISION MAKING
...elements of ethics, prototypes of ethical problems, ethical situations encountered in physical therapy/heath 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)
Power Engineering and Boiler Operator  
Program Code 304281

Technical Diploma - Two Years, Part-Time

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Power Engineering and Boiler Operator prepares students to manage, operate, and control low and 120 high-pressure boilers and auxiliary systems in factories, plants, and buildings.

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

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent (Equivalency may be established through GED testing or other tests).
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Note
A two-year diploma completion schedule is only possible if adequate course enrollment is attained.

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 17 credits.

First Semester
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-196-191</td>
<td>Supervision</td>
<td>3</td>
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<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
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<tr>
<td>30-403-338</td>
<td>Power House-Blueprint Rdg</td>
<td>1</td>
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<tr>
<td>30-413-345</td>
<td>Power House-Control Sys</td>
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<tr>
<td>30-413-347</td>
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<tr>
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<td>30-428-337</td>
<td>Power House-Economics</td>
<td>1</td>
</tr>
<tr>
<td>30-428-344</td>
<td>Power Engineering I</td>
<td>3</td>
</tr>
</tbody>
</table>

Semester Total 17
Total Credits 17

This program is not eligible for financial aid.
Please Note

• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions

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

10-804-106 INTRODUCTION TO COLLEGE MATH
...an introductory level course designed to review and develop fundamental concepts of arithmetic, algebra, geometry, and statistics. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percent; basic principles and application of algebra, geometry, graphing, and statistics; measurement skills in U.S. Customary and Metric Systems; and the use of calculators as a tool. (Prerequisite: Recommended math placement score of: Accuplacer (Arithmetic) score = 57 OR TABE Level A Math Score = 10.5)

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.

30-428-334 POWER ENGINEERING II
...advanced training regarding the principles and operational techniques associated with power and heating boilers. Prepare students with competencies to take the ASOPE or NIUPE exams to qualify for 3rd class licensing.

30-428-344 POWER ENGINEERING I
...boiler accidents, thermodynamics principles, high pressure steam boilers, boiler construction, fittings, instrumentation, controls, operation and maintenance, power plant pumps. refrigeration, air compression, prime movers, water treatment, electrical principles, support systems.
Practical Nursing
Program Code 315431

Technical Diploma – One Summer Plus Two Semesters
Offered at the Green Bay, Sturgeon Bay, and Marinette campuses and West Regional Learning Center. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. For information in Sturgeon Bay: (920) 746-4900. For information at the West Regional Learning Center: (715) 524-2418. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Practical Nursing graduates work in hospitals, nursing homes, clinics, community health agencies, and private homes. They give bedside care to patients whose conditions are relatively stable and assist the Registered Nurse or doctor in the care of the acutely ill person.

Program Outcomes
• Adhere to standards of practice within legal, ethical, and regulatory frameworks of the licensed practical nurse.
• Use effective communications skills.
• Assist with health assessment of individuals, families, and groups.
• Participate in clinical decision-making within the LPN scope of practice.
• Provide safe caring interventions with diverse populations.
• Use principles of teaching and learning processes to reinforce teaching plans.
• Work cooperatively with others to provide holistic care.
• Under supervision, manage and direct care within and across health care setting according to established protocols.

Clinical Experience
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, and participate in p.m. clinicals.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website:
www.dhfs.state.wi.us

Note
• Individuals with criminal records may be ineligible for licensure. Individuals with abuse records may be ineligible for employment in nursing homes.
• It is suggested that a Medical Terminology course (10-501-101) be taken prior to entering the program.

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 conditions are relatively stable;administers care to the acutely ill under the direct supervision of an RN or MD; teaches basic hygiene, nutrition, and aspects of good health; administers first aid; and assists with health assessment and basic health teaching in a variety of settings under the supervision of an RN or MD.

Health Insurance Claims Approver: processes insurance claims on a computer terminal.

Accreditation
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

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

First Semester
Catalog No. Description Credits
10-801-195 Written Communication 3
* 31-806-312 Anatomy/Struct-Funct 2
Semester Total 5

Second Semester
10-809-188 Developmental Psychology 3
* 31-543-301 PN-Nursing Fundamentals 2
* 31-543-302 PN-Nursing Skills 3
* 31-543-303 PN-Nursing Pharmacology 2
* 31-543-304 PN-Nursing/Intro to Clin Pract 2
Semester Total 12

Third Semester
10-801-196 Oral/Interpersonal Comm 3
* 31-543-305 PN-Nursing Health Alterations 3
* 31-543-306 PN-Nursing Health Promotion 3
* 31-543-307 PN-Nursing/Clin Care Lifespan 2
* 31-543-308 PN-Nursing/Intro to Clin Mgmt 2
Semester Total 13
Total Credits 30

* A minimum of a "C" grade is required for all courses marked with an asterisk.

This program is fully eligible for financial aid.

Board/Certification Examinations
Graduates of the program are eligible to take the Wisconsin State Board Examination for licensure as a Licensed Practical Nurse (LPN).

Requirements for Program Admission
Prior to submitting an application, candidates must have taken an Academic Skills Assessment or ACT assessment within the last three years. Academic Skills Assessment program benchmarks, or minimum standard composite score of 18 on the ACT, must be met prior to submitting an application. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.

Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• All students must successfully complete a DHFS approved Nursing Assistant course prior to submitting an application to the program.

Requirements for Program Entry
• Attend mandatory orientation.
• Complete physical examination within three months before entering program and maintain current immunization information.
• Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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

31-543-301 NURSING FUNDAMENTALS ...focus on basic nursing concepts that the beginning nurse will need to provide care to diverse patient populations. Current and historical issues impacting nursing will be explored. (Prerequisite: Accepted into Practical Nursing Program; Corequisite: 31-806-312, Anatomy/Structure Function)

31-543-302 NURSING SKILLS ...focuses on development of clinical skills and physical assessment across the lifespan. Includes math calculations and conversions, basic medication administration, techniques related to obtaining a health history. (Prerequisite: Accepted into Practical Nursing Program; Corequisite: 31-806-312, Anatomy/Structure Function)

31-543-303 NURSING PHARMACOLOGY ...introduces the principles of pharmacology, including drug classifications and their effects on the body. Emphasis is on the use of the components of the nursing process when administering medications. (Prerequisite: Accepted into Practical Nursing Program; Corequisite: 31-806-312, Anatomy/Structure Function)

31-543-304 NURSING: INTRODUCTION TO CLINICAL PRACTICE ...basic nursing skills, the formation of nurse-client relationships, communication, data collection, documentation, and medication administration. (Prerequisite: Accepted into Practical Nursing Program; Corequisite: 31-806-312, Anatomy/Structure Function)

31-543-305 NURSING HEALTH ALTERATIONS ...provides an opportunity to study conditions affecting different body systems and apply therapeutic nursing interventions. It will also introduce concepts of leadership, team building, and scope of practice. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-308, Nursing: Intro to Clinical Management)

31-543-306 NURSING HEALTH PROMOTION ...covers topics related to health promotion in the context of the family. Reproductive tissues, pregnancy, labor and delivery, post-partum, the newborn, and the child are included. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-307, Nursing: Clinical Care Across Lifespan)

31-543-307 NURSING: CLINICAL CARE ACROSS THE LIFESPAN ...clinical experience applies nursing concepts and therapeutic interventions to clients across the lifespan. Provides an introduction to concepts of teaching and learning. Extended care to include the family is emphasized. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-306, Nursing Health Promotion)

31-543-308 NURSING: INTRODUCTION TO CLINICAL MANAGEMENT ...applies nursing concepts and therapeutic nursing interventions to groups of clients. It also provides an introduction to leadership, management, and team building. (Prerequisite: Completion of 1st semester courses; Corequisite: 31-543-305, Nursing Health Alterations)

31-806-312 ANATOMY/STRUCTURE-FUNCTION ...human body systems, structural formation.
Press Technician-Printing

Technical Diploma - One Year

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The Press Technician-Printing program trains students in pre-press operations, offset presswork, lithographic and computer-to-plate imaging and finishing processes, and electronic publishing.

Program Outcomes
• 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.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Communication skills.
• 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 Offset/Press Operator, Offset/Press Assistant, Large Format Output Operator, Estimator/Production Planner, Bindery/Finishing Operator.

Offset/Press Operator: sets up, prepares and operates presses; loads paper, installs printing plates, adjusts guides and control for machine operations.

Offset/Press Assistant: prepares press for run; runs press proof; adjusts plate, paper feed, tension of paper; ink and water flow.

Large Format Output Operator: produce large format signage on different substrates.

Estimator/Production Planner: prepares price quotations, estimates for printing, and preliminary production schedules.

Bindery/Finishing Operator: operates machines that cut, fold, collate, staple, stitch, trim, and bind pages.

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
• Customer Service Representative

Curriculum
The Press Technician-Printing Technical Diploma is a one-year, two-semester program. Upon graduation, students will have completed 31 credits.

First Semester
Catalog No. Description Credits
10-111-103 Graphic Workstations 1
10-111-120 Macintosh Publishing 3
10-111-161 Macintosh Illustration 3
10-204-110 Publishing Technologies 3
10-204-111 Digital Publishing Operations 3
10-801-195 Written Communication 3

Semester Total 16

Second Semester
Catalog No. Description Credits
10-111-101 Macintosh-Image Editing 3
10-111-125 Graphic Reproduction Tech 3
10-204-120 Publishing Operations-Offset 3
10-204-122 Digital Publishing Systems 3
10-804-123 Math with Business Apps 3

Semester Total 15

Total Credits 31

This program is fully eligible for financial aid.
Please Note

• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions

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

10-111-101 MACINTOSH-IMAGE EDITING ...(Adobe Photoshop + Adobe Acrobat); scanning, editing, color correcting and creating composite montage photographs. Prepare images for publication in print or the internet. An introduction to manipulating bitmap images. (Prerequisite: 10-111-103, Graphic Workstations)

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

10-111-120 MACINTOSH PUBLISHING ...
develop page layout concepts utilizing document files, tools, guides, objects and shapes, text, colors, style sheets, images, master pages; manage output for printing; and apply copy elements. (Corequisite: 10-111-103, Graphic Workstations)

10-111-125 GRAPHIC REPRODUCTION TECHNIQUES ...
basics process of reproducing images using offset lithography including electronic imaging, preflighting, trapping concepts, imposition, and collect for output. (Prerequisite: 10-111-103, Graphic Workstations)

10-111-161 MACINTOSH ILLUSTRATION ...
create and paint basic shapes, draw, transform objects, work with type, blend shapes and colors, work with layers, special effects, and color separations. An introduction to manipulating vector based images. (Corequisite: 10-111-103, Graphic Workstations)

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

10-204-120 PUBLISHING OPERATIONS-OFFSET ...
detailed overview of the flexographic printing and offset lithographic printing processes; learners integrate classroom press operating experiences with interactions with industry. (Prerequisite: 10-111-103, Graphic Workstations)

10-204-122 DIGITAL PUBLISHING SYSTEMS ...
printing management process, related management skills, leadership skills, quality assessment techniques, and production schedules. (Prerequisite: 10-111-103, Graphic Workstations)

Visit our website at: www.nwtc.edu
Prototype & Design

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444. Toll-free: (800) 422-NWTC, ext. 5444. Visit the Prototype & Design website at: www.nwtc.edu/Programs/Prototype

Program Description
The Prototype and Design program prepares students to build a variety of three dimensional prototypes and models used in the design and engineering industry.

Students learn to develop prototypes for use in the manufacturing of automobiles, toys, and various stages of product development.

They also learn to build three-dimensional models used for architectural design, mechanical design, litigation, props, special effects and the entertainment industry.

Program Outcomes
• Develop planning strategies necessary to translate two-dimensional information into a three dimensional prototype.
• Use critical thinking and problem solving techniques in the construction of a model.
• Create a variety of computer aided drawings using AutoCad, Solidworks, Inventor, and Mechanical Desktop.
• Create programs to be used on CNC (computer numerical control) milling machines using Surf CAM software.
• Construct 3D models using a variety of rapid prototyping processes.
• Produce highly detailed and accurate parts using the laser machining center.
• Fabricate silicone rubber molds and rigid molds suitable for casting.
• Build patterns and molds to be used for vacuum forming.
• Create jigs and fixtures necessary for special machining operations.
• Apply a variety of industrial finishes on various materials.
• Effectively estimate the time and cost of a model.
• Manage computer files and utilize a variety of technically related software.
• Work efficiently as a part of a team, or independently.
• Safely operate all hand 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 Academic Skills Assessment 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.

Employment Potential
A graduate of the program will have the potential for employment as an entry level Prototype/Model Builder in the following areas:

Product Development: develops and designs new products through the use of prototypes.

Prototype Model Builder: provides research and development on new products, works with molding, and makes models for all types of industries, such as toy and automobile manufacturers, so that the prototype will look like the finished product before production begins.

Engineering Design: translates engineering data and vendor information into scale prototypes or CAD models for use with Rapid Prototyping Processes. Usually employed in design and development of new products or systems.

Architectural Model Builder: translates, to scale, all architectural drawings using plot plans, elevations, sections, and details to construct three dimensional models using a wide variety of materials and processes.

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.
• Mechanical Prototype Designer
• Model Shop Supervisor
• Computer Numerical Control Machinery Programmer/Operator
• Rapid Prototyping Operator
• Architectural Designer/Model Builder
• Freelance Model Builder

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

First Semester
Catalog No.  Description Credits
10-420-151 Prototype Machine Tool 3
10-606-113 CAD 2
10-614-113 2D Essentials 2
10-614-152 Prototyping-Introduction to 5
10-801-196 Oral/Interpersonal Comm 3
10-804-110 Elem Algebra w Apps 3
Semester Total 18

Second Semester
10-442-153 Prototype Metal Fabrication 2
10-614-122 Prototype Design 3
10-614-124 Design Visualization 5
10-801-195 Written Communication 3
10-804-118 Intermed Algebra w Apps 4
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
10-614-176 Model Finishing 3
10-809-172 Race Ethnic & Diversity 3
Semester Total 17

Fourth Semester
10-614-143 Prototyping Solutions Advanced 5
OR
10-614-139 Prototype & Design Internship 5
10-614-150 Visual Effects Modeling 3
10-614-174 Models-Machine 2
10-809-166 Intro to Ethics: Theory & App 3
10-809-198 Intro to Psychology 3
Semester Total 16
Total Credits 68

This program is fully eligible for financial aid.

Program Code 106142
Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses. Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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

10-420-151 PROTOTYPE MACHINE TOOL
...introduction to machine shop fundamentals using precision measuring instruments; performing machine tool operations on a metal lathe, vertical and horizontal milling machines and surface grinders; and basic foundry applications.

10-442-153 PROTOTYPE METAL FABRICATION
...ferrous and non-ferrous metals, oxyacetylene gas, tungsten arc, gas metal arc, and metal fabrication.

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

10-614-113 2D ESSENTIALS
...an introduction to technical communication, annotation, geometric construction, model, orthographic and pictorial, section and auxiliary views and dimensioning. Knowledge integral to Model Building.

10-614-122 PROTOTYPE DESIGN
...creation of advanced mechanical and architectural computer aided drawings using AutoCAD, SolidWorks, and SurfCAM software to produce 2 axis and 3 axis parts on a CNC milling machine. (Prerequisites: 10-606-113, Computer Aided Drafting; 10-614-152, Model Building-Introduction to; Corequisite: 10-614-124, Design Visualization)

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: 10-614-152, Model Building-Introduction to; 10-606-113, CAD; Corequisite: 10-614-122, Model Layout/Design)

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: 10-614-152, Prototyping-Introduction)

10-614-136 MODELING 3D-CAD
...solid modeling (3D drawing) using AutoCAD, Solid Works, and Inventor; 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. (Prerequisites: 10-614-122, Prototype Design; 10-614-124, Design Visualization)

10-614-139 PROTOTYPE & DESIGN INTERNSHIP
...an introduction to model building, safety, tools, materials, flexible mold making, casting, limited run production, techniques and practices as on-the-job training.

10-614-143 PROTOTYPING SOLUTIONS ADVANCED
...an introduction to product and prototype modeling, safety, tools, materials, plastics, reinforcement, composites, flexible mold making, casting, limited run production, techniques and practices. (Prerequisite: 10-614-152, Model Building-Introduction to)

10-614-150 VISUAL EFFECTS MODELING
...create foam latex masks from a clay sculpture that could be used as special effects in the entertainment industry. Learn to animate masks and props using radio control.

10-614-152 PROTOTYPING-INTRODUCTION TO
...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.

10-614-174 MODELS-MACHINE
...working models, preliminary through final prototype; plastic mechanisms, motions, characteristics, combinations, mechanical advantages, fits, clearances, threads, gears, levers, cams, motors, fasteners, and methods. (Prerequisite: 10-614-152, Prototyping Introduction to)

10-614-176 MODEL FINISHING
...industrial finishes, textures and methods of applications commonly used in the profession, variety of finishes using airbrushes, spray guns and brushes, application of several industrial finishes.

Visit our website at: www.nwtc.edu
Radiography

Associate Degree - Two Years Plus Two Summers
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Graduates perform routine radiographic imaging of the body. They work closely with physicians and may assist in the performance of invasive procedures. After completion of our program, many students may choose to acquire advanced certificates in Mammography, Bone Densitometry, Computed Tomography (CT) and/or Magnetic Resonance Imaging (MRI).

Program Outcomes
- Apply fundamentals of radiologic science and health care.
- Apply ethics and law in the radiologic sciences.
- Use medical terminology.
- Perform patient care in radiologic sciences.
- Apply human structure and function.
- Perform radiographic procedures.
- Perform imaging and processing.
- Use imaging equipment.
- Perform image analysis.
- Assess radiation production characteristics.
- Apply radiation protection.
- Explain radiation therapy.
- Use computers in radiologic sciences.
- Apply pharmacology and drug administration.
- Perform clinical practice.
- Respect human diversity.

Clinical Practicum
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us.

Accreditation
The Radiography program is accredited by the North Central Association of Colleges and Schools, 30 North LaSalle Street, Suite 2400, Chicago, Illinois 60602.

Board/Certification Examinations
Graduates are qualified to take the American Registry in Radiography Technologist (ARRT) Examination.

Employment Potential
A graduate of the Radiography program can choose to work in a variety of health care settings including clinics, hospitals and private practice physician offices.

Career advancement opportunities exist in education, administration, and in commercial companies as education/application specialists, sales representatives, technical experts, etc.

Requirements for Program Application
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
- High school diploma or equivalent.
- One year of Algebra and Chemistry with a grade of “C” or better. If high school courses, “C” in two semesters of each.

Candidates submitting applications to the Radiography program must also provide:
- Three completed reference forms (professional and academic)
- An essay (no more than 1,000 words) outlining the following information: A description of why they are interested in the profession, their current knowledge of the profession, and why they are a good candidate for the program.

The Radiography program follows a competitive enrollment process whereby candidate applications are reviewed by a Selection Committee. Candidates are ranked in the following categories: Assessment, Math/Science, Essays, References. The highest ranking candidates will be offered a place on the program wait list. Remaining candidates will have the opportunity to re-apply.

Requirements for Program Entry
- Attend spring program orientation.
- Complete physical examination within three months before entering program and maintain current immunization information.
- 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.

Suggested Skills For Success
Students are expected to have entry-level computer skills. It is recommended that students complete basic computer skills coursework if deficient in this area.

Curriculum
The Radiography program is a two-year, two-summer, six-semester program. Upon graduation, a student will have completed 68 credits.

Summer semester core classes are scheduled to begin mid-May and end mid-July.

First Semester
Catalog No. Description Credits
* 10-526-149 RT-Anatomy & Procedures 1 5
* 10-526-158 RT-Intro to Radiography 2
* 10-526-159 RT-Imaging 1 3
* 10-526-168 RT-Clinical Practice 1 2
* 10-806-177 Gen Anatomy & Physiology 4
Semester Total 16

Second Semester
Catalog No. Description Credits
* 10-526-170 RT-Imaging 2 3
* 10-526-191 RT-Anatomy & Procedures 2 5
* 10-526-192 RT-Clinical Practice 2 4
10-801-195 Written Communication 3
10-809-198 Intro to Psychology 3
Semester Total 18

Summer Semester
Catalog No. Description Credits
* 10-526-193 RT-Clinical Practice 3 2
10-809-166 Intro to Ethics: Theory & App 3
Semester Total 5

Third Semester
Catalog No. Description Credits
* 10-526-194 RT-Imaging Equip & Computers 4
* 10-526-195 RT-Image Analysis 2
* 10-526-196 RT-Modalities 1
* 10-526-199 RT-Clinical Practice 4 5
10-801-196 Oral/Interpersonal Comm 3
Semester Total 12

Fourth Semester
Catalog No. Description Credits
* 10-526-189 RT-Radiographic Pathology 1
* 10-526-190 RT-Clinical Practice 5 2
* 10-526-197 RT-Radiation Protect & Biology 3
10-809-172 Race Ethnic & Diversity 3
10-809-196 Intro to Sociology 3
Semester Total 12

Summer Semester
Catalog No. Description Credits
* 10-526-198 RT-Clinical Practice 6 2
Semester Total 2
Total Credits 68

* No final grade lower than “C” is acceptable in any of the courses marked with an asterisk. A student who withdraws or receives a grade lower than a “C” in a program course, may apply for reentry into the program. Consideration for reentry will be at the discretion of the radiography faculty on a case-by-case basis and also dependent on clinical availability. If a student wishes to re-enter the Radiography Program after one year, the student will have to repeat all the Radiography Core Courses and will have to follow all the admission requirements and standard of all other potential Radiography Program students (including, but not limited to a waitlist). Request for reentry or withdrawal form the program require submission of the appropriate form.

This program is fully eligible for financial aid.

Northeast Wisconsin Technical College 2006-2007 Catalog
Course Descriptions

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

10-526-149 RT-RADIOGRAPHIC ANATOMY & PROCEDURES 1 ...prepares radiography students to perform routine radiologic procedures on various parts of the body including the upper and lower extremities, hip and pelvis. (Prerequisite: Enrolled in Radiography program)

10-526-158 RT-INTRODUCTION TO RADIOGRAPHY ...introduces students to the role of radiography in health care. Students apply legal and ethical considerations to patient care and pharmacology in radiologic sciences. (Prerequisite: Enrolled in Radiography program)

10-526-159 RT-RADIOGRAPHIC IMAGING 1 ...introduces radiography students to the process of creating radiographic images. Students determine the factors that affect image quality. Students apply OSHA standards for health and safety in the darkroom. (Prerequisite: Enrolled in Radiography program)

10-526-168 RT-RADIOGRAPHY CLINICAL PRACTICE 1 ...this beginning level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. An emphasis of the course is development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: Enrolled in Radiography program)

10-526-170 RT-RADIOGRAPHIC IMAGING 2 ...prepares radiography students to apply advanced radiographic principles to the production of radiographic images. Students analyze exposure factor considerations, differentiate between film and exposure latitude, and beam restricting devices. (Prerequisite: 10-526-159, RT-Radiographic Imaging 1)

10-526-189 RT-RADIOGRAPHIC PATHOLOGY ...prepares radiography students to determine the basic radiographic manifestations of pathological conditions. Students classify trauma related to site, complications, and prognosis and locate the radiographic appearance of pathologies. (Prerequisite: 10526195, RT-Image Analysis)

10-526-190 RT-RADIOGRAPHY CLINICAL PRACTICE 2 ...this second level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-168, RT-Radiography Clinical Practice 1)

10-526-192 RT-RADIOGRAPHY CLINICAL PRACTICE 3 ...this third level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. An emphasis of the course is the demonstration of communication and critical thinking skills appropriate to the clinical setting. (Prerequisite: 10-526-192 RT-Radiography Clinical Practice 2)

10-526-193 RT-RADIOGRAPHY CLINICAL PRACTICE 4 ...this fourth level clinical course prepares radiography students to perform radiologic procedures on patients with supervision and direction. Students are encouraged to demonstrate independent judgment in the performance of clinical competencies. (Prerequisite: 10-526-193, RT Radiography Clinical Practice 3)

10-526-194 RT-IMAGING EQUIPMENT & COMPUTERS ...introduces radiography students to the principles and application of x-ray technology. Students analyze how x-rays are produced and determine the corrective actions necessary for common equipment malfunctions. (Prerequisite: 10-526-170, RT-Radiographic Imaging 2)

10-526-195 RT-RADIOGRAPHIC IMAGE ANALYSIS ...prepares radiography students to analyze radiographic images for quality. Students apply quality control tests to determine the causes of image problems including equipment malfunctions and procedural errors. (Prerequisite: 10-526-170, RT-Radiographic Imaging 2)
Respiratory Therapist
Associate Degree - Two Years Plus One Summer
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The Respiratory Therapist program trains students in the diagnosis, treatment, and rehabilitation of patients with chronic and acute diseases of the heart and lungs.

Program Outcomes
• Apply advanced-level respiratory therapy concepts to patient care situations.
• Demonstrate technical proficiency required to fulfill the role of an advanced-level Respiratory Therapist.
• Practice respiratory therapy according to established professional and ethical standards.

Clinical Practicum
Students will be required to purchase a nametag and uniform, pay for liability insurance, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Wisconsin’s Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhs.state.wi.us.

Accreditation
The Respiratory Therapist program is accredited by the Committee on Accreditation for Respiratory Care (CoARC) 1248 Harwood Road Bedford, TX 76021-4244 (817) 283-2833

Board/Certification Examinations
Graduates are eligible to take the National Board for Respiratory Care Credentialing Examinations.

Employment Potential
A graduate of this program will have the potential for employment as a Respiratory Therapist 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 and 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 setting 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.

Requirements for Program Admission
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent.
• One year of Algebra with a “C” or better (or attain program benchmark for Algebra on the Academic Skills Assessment).
• One year of Biology AND one year of Chemistry, or equivalent, with a grade of “C” or better. If in high school, “C” in two semesters of each.
• One year of Physics OR one year of advanced math, or equivalent, with a grade of “C” or better. If in high school, “C” in two semesters of each.

Priority Admission
Applicants with documentation of completion of General Anatomy and Physiology, with a “C” or better, will receive priority standing among that year’s applicant pool.

Requirements for Program Entry
• Meet established Academic Skills Assessment program benchmarks, or achieve minimum standard composite score of 20 on the ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend spring Program Orientation or complete an interview.
• Complete physical examination within three months before entering program and maintain current immunization information.
• Complete an American Heart Association Health Care Provider CPR course. Students are required to maintain a current CPR card on a one-year renewal cycle to comply with affiliating agency requirements.
Curriculum
The Respiratory Therapist Associate Degree is a two-year, one-summer, five-semester program. Upon graduation, a student will have completed 70 credits.

Summer semester core classes are scheduled to begin mid-May and end mid-July.

**First Semester**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-501-101</td>
<td>Medical Terminology</td>
<td>3</td>
</tr>
<tr>
<td>* 10-515-170</td>
<td>Respiratory Therapy</td>
<td>4</td>
</tr>
<tr>
<td>10-801-196</td>
<td>Oral/Interpersonal Comm</td>
<td>3</td>
</tr>
<tr>
<td>* 10-806-177</td>
<td>Gen Anatomy &amp; Physiology</td>
<td>4</td>
</tr>
<tr>
<td>10-809-198</td>
<td>Intro to Psychology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
<td></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

| * 10-515-171 | Respiratory Therapeutics | 3       |
| * 10-515-173 | Respiratory Pharmacology | 3       |
| * 10-515-174 | Respiratory & Circulatory Phys | 3       |
| 10-801-195  | Written Communication | 3       |
| 10-806-197  | Microbiology | 4       |
| **Semester Total** | | **16** |

**Summer Semester**

| * 10-515-172 | Respiratory Therapeutics | 3       |
| * 10-515-175 | Respiratory Therapy Clinical 1 | 2       |
| **Semester Total** | | **5** |

**Third Semester**

| * 10-515-176 | Respiratory Disease | 3       |
| * 10-515-177 | Respiratory Life Support | 4       |
| * 10-515-178 | Respiratory Therapy Clinical 2 | 3       |
| * 10-515-179 | Respiratory Therapy Clinical 3 | 3       |
| 10-809-196  | Intro to Sociology | 3       |
| **Semester Total** | | **16** |

**Fourth Semester**

| 10-515-162 | Clinical Simulation Rev 1 | 1       |
| 10-515-163 | Clinical Simulation Rev 2 | 1       |
| * 10-515-180 | Respiratory Neonatal/Peds Care | 2       |
| * 10-515-181 | Respiratory Diag & Monitor | 3       |
| * 10-515-182 | Respiratory Therapy Clinical 4 | 3       |
| * 10-515-183 | Respiratory Therapy Clinical 5 | 3       |
| 10-809-172  | Race Ethnic & Diversity | 3       |
| **Semester Total** | | **16** |
| **Total Credits** | | **70** |

* No final grade lower than a "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 retest must occur before continuing the sequence.

This program is fully eligible for financial aid.

Visit our website at: www.nwtc.edu

Please Note
- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor. (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

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

10-501-101 MEDICAL TERMINOLOGY ...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis, and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

10-515-162 CLINICAL SIMULATION REVIEW 1 ...preparation for the testing processes utilized by the National Board for Respiratory Care; all testing processes will be reviewed utilizing appropriate content. (Corequisites: 10-515-182, Respiratory Therapy Clinical 4; 10-515-183, Respiratory Therapy Clinical 5)

10-515-163 CLINICAL SIMULATION REVIEW 2 ...the diagnosis, management, and treatment received by cardiopulmonary patients. (Corequisites: 10-515-182, Respiratory Therapy Clinical 4; 10-515-183, Respiratory Therapy Clinical 5)

10-515-170 RESPIRATORY THERAPY SURVEY ...examines the role of the respiratory therapist within the healthcare community. Reviews the ethical, legal, and regulatory principles that guide practice across diverse populations. Introductory patient assessment and critical thinking processes used in the development of respiratory care plans are explored. (Prerequisite: Accepted into the Respiratory Therapist Program)

10-515-171 RESPIRATORY THERAPEUTICS 1 ...introduces the topics of medical gas administration and humidity and aerosol therapy. The learner will apply physics, math and patient assessment concepts to oxygen, aerosol and humidity. (Prerequisites: 10-515-180, Respiratory Therapy Clinical 1; 10-515-177, Respiratory Therapy Clinical 2; 10-806-177, General Anatomy & Physiology)

10-515-172 RESPIRATORY THERAPEUTICS 2 ...introduces therapeutic procedures including arterial puncture, bronchial hygiene, lung expansion therapy and pulmonary rehabilitation. (Prerequisite: 10-515-171, Respiratory Therapists 1)

10-515-173 RESPIRATORY PHARMACOLOGY ...examines basic pharmacology principles, drug dosage, and calculations. Medications for inhalation including mucolytics, bronchodilators, anti-inflammatories. Also includes cardiac drugs, anesthetic drugs, neuromuscular blockers and antimicrobials. (Prerequisite: 10-806-177, General Anatomy & Physiology)

10-515-174 RESPIRATORY & CIRCULATORY PHYSIOLOGY ...provides the student with an in depth knowledge of the structure and function of the respiratory and circulatory systems necessary to function as a competent Respiratory Therapist. (Prerequisite: 10-806-177, General Anatomy & Physiology)

10-515-175 RESPIRATORY THERAPY CLINICAL PRACTICE 1 ...introduces respiratory therapy practice in the hospital setting. Includes the development of skills such as basic therapeutics, patient assessment, medical record review, safety practices, patient interaction and communication. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 5 (required and/or simulated) competencies. The instructor may identify specific competencies to be addressed during this or any clinical. (Prerequisite: 10-515-170, Respiratory Therapy Survey; Corequisite: 10-501-101, Medical Terminology)

10-515-176 RESPIRATORY DISEASE ...exploration of signs, symptoms, causes, progression and treatment of obstructive, restrictive and infectious diseases or disorder of the body that affect the respiratory system. (Prerequisites: 10-515-170, Respiratory Therapy Survey; 10-806-177, General Anatomy & Physiology)

10-515-177 RESPIRATORY LIFE SUPPORT TECHNOLOGY ...focuses on adult respiratory critical care including management of mechanical ventilation and artificial airways. (Prerequisites: 10-515-172, Respiratory Therapists 2; 10-515-174, Respiratory & Circulatory Physiology; 10-515-175, Respiratory Therapy Clinical 1)

10-515-178 RESPIRATORY THERAPY CLINICAL PRACTICE 2 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 12 (required and/or simulated) competencies. (Prerequisite: 10-515-175, Respiratory Therapy Clinical 1)

10-515-179 RESPIRATORY THERAPY CLINICAL PRACTICE 3 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 19 (required and/or simulated) competencies. (Corequisite: 10-515-180, Respiratory Therapy Clinical 2)

10-515-180 RESPIRATORY NEONATAL/PEDIATRIC CARE ...provides a comprehensive orientation to the field of pediatric respiratory care to include fetal development, birth, neonatal physiology, pulmonary dynamics, abnormal cardiopulmonary conditions, diseases, noninvasive and invasive therapeutic interventions. (Prerequisite: 10-515-177, Respiratory Life Support Technology)

10-515-181 RESPIRATORY & CIRCULATORY DIAGNOSTICS & MONITORING ...advanced invasive and noninvasive diagnostic cardiopulmonary procedures including pulmonary function, hemodynamics and rescue medicine. (Prerequisites: 10-515-173, Respiratory Pharmacology; 10-515-176, Respiratory Disease; 10-515-177, Respiratory Life Support Technology)

10-515-182 RESPIRATORY THERAPY CLINICAL PRACTICE 4 ...continued development of Respiratory Therapy clinical skills including respiratory therapeutics. Focuses on monitoring, analyzing and interpreting data to make appropriate modifications in patient care. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in a minimum of 26 (required and/or simulated) competencies. (Prerequisite: 10-515-179, Respiratory Therapy Clinical 3)

10-515-183 RESPIRATORY THERAPY CLINICAL PRACTICE 5 ...focuses on the completion of respiratory therapy competencies and transition to employment. This course includes the complete program competency list. At the completion of this clinical learners must demonstrate competence in all of the (required and required/simulated) competencies. (Corequisite: 10-515-182, Respiratory Therapy Clinical 4)

10-515-183 RESPIRATORY PHARMACOLOGY ...examines basic pharmacology principles, drug dosage, and calculations. Medications for inhalation including mucolytics, bronchodilators, anti-inflammatories. Also includes cardiac drugs, anesthetic drugs, neuromuscular blockers and antimicrobials. (Prerequisite: 10-806-177, General Anatomy & Physiology)

10-515-184 RESPIRATORY DISEASE ...exploration of signs, symptoms, causes, progression and treatment of obstructive, restrictive and infectious diseases or disorder of the body that affect the respiratory system. (Prerequisites: 10-515-170, Respiratory Therapy Survey; 10-806-177, General Anatomy & Physiology)
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.

Program Outcomes
- 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 Academic Skills Assessment section of this catalog for more information.
- Ability to use computer keyboard.
- Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

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
Catalog No. | Description | Credits
--- | --- | ---
10-102-158 | Business Intro | 3
10-103-121 | Micro: Word Intro | 1
10-103-131 | Micro: Excel Intro | 1
10-103-141 | Micro: Access Intro | 1
10-104-101 | Selling Principles | 3
10-104-190 | Retail Principles | 3
10-801-195 | Written Communication | 3
10-804-123 | Math with Business Apps | 3

**Semester Total** 18

Second Semester
Catalog No. | Description | Credits
--- | --- | ---
10-104-110 | Marketing Principles | 3
10-104-191 | Customer Service Mgmt | 3
10-104-192 | Merchandise Management | 3
10-145-177 | Business Mgmt-Small | 3
10-801-198 | Speech | 3

**Semester Total** 15

Third Semester
Catalog No. | Description | Credits
--- | --- | ---
10-104-193 | Retail Operations Mgmt | 3
10-196-189 | Team Building/Prob Solve | 3
10-196-193 | Human Resource Mgmt | 3
10-809-195 | Economics | 3
10-809-199 | Psychology Of Human Relations | 3

**Semester Total** 15

Fourth Semester
Catalog No. | Description | Credits
--- | --- | ---
10-104-135 | Retail Mgmt-Survival | 3
10-196-164 | Supervisors-Personal Skills | 3
10-104-164 | Retail Mgmt Internship | 3
10-104-180 | Retail Mgmt Field Study | 3
10-104-189 | Sales Management | 3
10-182-130 | E-Comm Logistics/Fulfill | 3
10-809-172 | Race Ethnic & Diversity | 3
10-809-197 | Contemporary Amer Society | 3

**Semester Total** 18
**Total Credits** 66

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.

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

10-103-131 MICRO: EXCEL-INTRODUCTION
...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION
...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. 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 of distribution, pricing, promotional decisions for 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.

10-104-189 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.

10-104-190 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.

10-104-192 MERCHANDISE MANAGEMENT
...basic theories of merchandising applied to the current retail environment.

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.

10-145-177 BUSINESS MANAGEMENT-SMALL
...entrepreneurship, success and failure, getting started: sources of capital, location, layout, and legal forms of organization, managing and operating, planning and organizing, directing and monitoring performance, marketing strategy, and administration.

10-182-130 E-COMMERCE LOGISTICS/FULFILLMENT
...e-commerce, business-to-business e-commerce, consumer e-commerce, e-commerce distribution, e-procurement, e-commerce connection, legal and ethical issues, and e-commerce logistics applications.

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.

10-196-189 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.
Supply Chain Management

Associate Degree - Two Years

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Supply Chain Management prepares students in all activities involved in the flow of goods from the point of origin to the point of consumption. Specific areas include transportation, inventory control, materials management, operations management, purchasing, international trade, customer service, and logistics management.

Program Outcomes
• Compare major transportation modes.
• Respond appropriately to requests for transportation services.
• Perform inventory control.
• Demonstrate familiarity with global trade processes.
• Develop a global supply chain 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.
• Demonstrate ability to integrate computer applications to supply chain activities.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• Ability to use computer keyboard
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Employment Potential continued
Dispatcher: assigns freight to routes, assigns vehicles and routes to drivers, and handles exceptions.

Inventory Analyst: compiles and manages information of amount, kind, and value of merchandise, material, or stock on hand to obtain optimum inventory balance, price, and costs.

Inventory Control Specialist: coordinates inventory issues with purchasing, production, and marketing; tracks current and forecasted levels of inbound and finished goods inventory.

Logistics Technician: communicates effectively with carriers and customers in 3PL environment, manages trailer needs, provides carrier assignments, monitors and traces customer shipments, and participates in carrier evaluation process.

Materials Planner: coordinates and expedites flow of manufacturing materials, parts, and assemblies with or between departments or plants in accordance with production and shipping schedules.

Master Production Scheduler: creates master production schedule and work orders; establishes priorities for current and forecasted customer demand; establishes availability or capacity of workers, parts, machinery, and equipment.

Purchasing Assistant: performs basic activities related to supplier evaluation and selection, product specifications, order quantities, and delivery requirements.

Shipping and Receiving Specialist: coordinates the flow of raw materials and finished goods to meet production and customer requirements and works with transportation carriers to assure timely and accurate pickup and delivery.

Transportation Planner/Coordinator: interfaces with customers and carriers in resolving pricing and delivery issues in 3PL environment, optimizes order consolidation and carrier selection considering cost, lead time, carrier capacity, and warehouse space constraints.

Warehouse Specialist: manages the flow of inventory into and out of a storage facility or distribution center, and works with owners of the inventory to meet inventory level and customer service needs.

With additional education and/or work experience, graduates may find other opportunities for employment.
• Account Manager
• Logistics Manager
• Materials Manager
• Production and Inventory Control Manager
• Purchasing Manager
• Traffic Manager

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

First Semester
Catalog No. Description Credits
10-103-121 Micro: Word-Intro 1
10-103-131 Micro: Excel-Intro 1
10-103-141 Micro: Access-Intro 1
10-103-151 Micro: PowerPoint-Intro 1
10-138-150 Global Business-Fund 3
10-182-110 Materials/Operations Mgmt 3
10-182-157 Logistics/Supply Chain Mgmt 3
10-804-123 Math with Business Apps 3

Semester Total 16

Second Semester
10-101-141 Accounting-Financial 3
10-104-191 Customer Service Mgmt 3
10-182-109 Transportation-Intro 3
10-182-129 Enterprise Resource Plan/Cont 3
10-182-127 Purchasing 3
10-801-195 Written Communication 3

Semester Total 18

Third Semester
10-104-110 Marketing Principles 3
10-138-155 International Marketing 3
10-182-116 Transportation Admin 3
10-801-196 Oral/Interpersonal Comm 3
10-809-166 Intro to Ethics: Theory & App 3
10-809-195 Economics 3
10-809-199 Psychology Of Human Relations 3

Semester Total 18

Fourth Semester
10-138-160 Global Supply Chain 3
10-182-130 E-Comm Logistics/Fulfil 3
10-182-141 Supply Chain Mgmt Internship 3
10-809-172 Race Ethnic & Diversity 3
Elective 3

Semester Total 15
Total Credits 67

Suggested Electives:
Negotiations, 10-182-131
Commercial Motor Carrier, 10-182-166
International Business Practice Firm, 10-102-104

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.

10-101-141 ACCOUNTING-FINANCIAL ...teaching non-accountants to read, analyze, and interpret financial information for making informed business decisions. This class deemphasizes the use of debits, credits, journal entries and other accounting procedures.

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

10-103-131 MICRO: EXCEL-INTRODUCTION ...creating a worksheet, enhancing worksheet appearance, moving and copying data, using formulas and functions, creating charts and using clip art. Requires Windows experience.

10-103-141 MICRO: ACCESS-INTRODUCTION ...creating and modifying database tables, compacting a database, managing records, defining table relationships, creating queries, calculations, and aggregate functions, sorting, and using form and report wizards. Requires Windows experience.

10-103-151 MICRO: POWERPOINT-INTRODUCTION ...prepare handouts and slide shows using templates, animations, transitions, sounds, and hyperlinks. Requires Windows experience.

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

10-108-150 GLOBAL BUSINESS FUNDAMENTALS ...globalization, cultural environment, global trade environment, politics and law, economic integration, global trade and investment theories, exporting, global marketing, and global supply chain.

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.

10-108-155 INTERNATIONAL MARKETING ...tools necessary for the student to understand the risks, rewards, and the technical aspects of doing business in a global environment.

10-108-160 GLOBAL SUPPLY CHAIN ...methods of foreign market entry, international contracts, INCOTERMS 2000, terms of payment, international commercial documents, international insurance, export packaging, customs clearance, and global supply chain logistics infrastructure.

10-108-109 TRANSPORTATION-INTRODUCTION ...the role and importance of transportation, transportation regulations and public policy, overview of transportation providers: motor carriers, railroads, air carriers, domestic water carriers, pipelines, inter-modal and special carriers.

10-108-110 MATERIALS/OPERATIONS MANAGEMENT ...lean operating concepts, total quality management, six sigma methodologies, continuous improvement tools/techniques, process mapping, 5S principles, statistical process control/pull signals, cellular manufacturing, mixed-model production, human resource development.

10-108-116 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.

10-108-120 ENTERPRISE RESOURCE PLAN/CONTROL ...enterprise resource planning (ERP), benefits of ERP implementation in an organization, business process alignment, value chain process, technology and international considerations, successful change management, and ERP project management.

10-108-127 PURCHASING ...role of purchasing in business, industry, and the community; legal and ethical aspects of purchasing including systems, staffing, price/cost analysis, contract administration, and dealing with vendors.


10-108-141 SUPPLY CHAIN MANAGEMENT INTERNSHIP ...training and experience through work experience and observation.

10-108-157 LOGISTICS/SUPPLY CHAIN MANAGEMENT ...integrated logistics supply chain, dimensions of logistics and supply chain management, demand management and customer service, procurement and supply management, global logistics, inventory management, warehousing, transportation and third-party logistics.
Surgical Technologist

Technical Diploma - Three Semester Program: Enter in Summer or Fall
Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
The Surgical Technologist prepares and maintains a sterile field before and during surgery, passes instruments and supplies to the surgeon, provides safe patient care, and prepares instruments for operative procedures.

Program Outcomes
• Apply health science principles to the peri-operative environment.
• Apply principles of disinfection and sterilization to the surgical environment, equipment, and instrumentation.
• Maintain principles of aseptic technique in the surgical environment.
• Prepare the operating room by gathering equipment and supplies.
• Pass instruments, equipment, and supplies.
• Provide a safe, efficient, and supportive environment for the peri-operative patient.
• Anticipate the sequence of events during surgical procedures.
• Prepare and manage medications and solutions.
• Function as an ethical, legal, and moral member of the healthcare team within the surg tech's scope of practice.

Clinical Practicum
Students will be required to purchase scrub suits, pay for liability insurance for each course, provide their own transportation to assigned sites, and cover any other expenses related to clinical experiences. Students may be expected to travel distances, participate in p.m. clinicals, or weekend rotations.

Wisconsin's Caregiver Law (1997 WISCONSIN ACT 27) requires a completed caregiver background check prior to access to patients and/or children in clinical agencies/field sites used by this program. Based upon results of the caregiver 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 website: www.dhfs.state.wi.us.

Accreditation
The Surgical Technologist Program is accredited by Commission on Accreditation of Allied Health Education Programs in collaboration with the Accreditation Review Committee on Education in Surgical Technology 7108-C South Alton Way, Suite 150 Englewood, CO 80112 (303) 694-9262 FAX (303) 689-0518

Employment Potential
A graduate of this 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 operative procedures.

Central Supply Technician: performs general cleaning of soiled equipment and instruments, assembles procedure trays and instrument pans, maintains inventories, operates sterilizer, records patient charges, and does general record keeping.

Claims Approver: processes insurance claims on a computer terminal.

Private Scrub Technician: is hired by the physician and assists as a surgical technologist in a hospital or in a private practice.

Requirements for Program Admission
Candidates submitting an application must have taken an Academic Skills Assessment or ACT assessment within the last three years.

Candidates must submit transcripts demonstrating completion of the following with the application:
• High school diploma or equivalent

Requirements for Program Entry
• Meet established Academic Skills Assessment program benchmarks or a minimum standard composite score of 14 on the ACT. Proof of remediation may be demonstrated by an Academic Skills Assessment post-test or completion of an approved course in the content requiring remediation.
• Attend program orientation.
• Complete physical examination within three months before entering the program and maintain current immunization information.
• 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.

Curriculum
The Surgical Technologist Technical Diploma is a three-semester program. Upon graduation, a student will have completed 33 credits.

First Semester
Catalog No. Description Credits
10-501-101 Medical Terminology 3
*31-512-326 ST-Infection Control 1
31-801-385 Communicating- Writing 1
31-801-386 Communicating Effectively 1
*31-806-312 Anatomy/Struct-Funct 2
Semester Total 8

Second Semester
*31-512-327 ST-Intro to Surg Tech 4
*31-512-328 ST-Fundamentals 1 4
*31-512-329 ST-Fundamentals 2 2
*31-512-330 ST-Clinical 1 3
Semester Total 13

Third Semester
*31-512-331 ST-Surgical Procedures 4
*31-512-332 ST-Clinical 2 4
*31-512-334 ST-Clinical 3 4
Semester Total 12
Total Credits 33

* A minimum of a "C" grade is required for all courses marked with an asterisk.

Note
A student must be accepted into the Surgical Technologist program before enrolling in 31-512-327, ST-Intro to Surg Tech.

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.

10-501-101 MEDICAL TERMINOLOGY...focuses on the component parts of medical terms: Prefixes, suffixes, and root words. Students practice formation, analysis and reconstruction of terms. Emphasis on spelling, definition and pronunciation. Introduction to operative, diagnostic, therapeutic and symptomatic terminology of all body systems, as well as systemic and surgical terminology.

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

31-512-327 ST-INTRO TO SURGICAL TECHNOLOGY...provides foundational knowledge of disinfection, sterilization, infection control, asepsis, legal and ethical issues in healthcare. Simulated laboratory practice enables learner to develop beginning technical skills to function in the operating room. (Prerequisites: 31-806-312, Anatomy/Struct-Funct; 10-501-101, Medical Terminology; Accepted into the Surgical Technologist Program; Corequisite: 31-512-326, ST-Infection Control)

31-512-328 ST-FUNDAMENTALS 1...provides identification of basic instrumentation, sterile supplies and surgical equipment. Includes practice experience in the scrub role: creating a sterile field, preparing supplies, draping, passing instruments and supplies, and performing counts. (Prerequisites: 31-806-312, Anatomy/Struct-Funct; 10-501-101, Medical Terminology; 315-512-326, ST-Infection Control)

31-512-329 ST-FUNDAMENTALS 2...reinforces the Surgical Technologist role as a member of the operating room team. Discusses pre-operative, intra-operative, and post-operative patient care with emphasis on surgical wounds, wound closure material, and vital sign counts. (Corequisites: 31-512-327, ST-Intro to Surg Tech; 31-512-328, ST-Fundamentals 1)

31-512-330 ST-CLINICAL 1...apply basic surgical theories, principles, and procedural techniques in the operating room. Functions in clinical as a team member under the guidance of the instructor and clinical personnel. (Corequisite: 31-512-327, ST-Intro to Surg Tech; 31-512-328, ST-Fundamentals 1)

31-512-331 ST-CLINICAL 2...further experience in a clinical setting to improve technical skills while accepting more responsibilities during surgical procedures. (Prerequisites: 31-512329, ST-Fundamentals 2; 31-512-330, ST-Clinical 1; Corequisite: 31-512-331, ST-Surgical Procedure)

31-512-334 ST-CLINICAL 3...enhances technical experience and employee skills. Application of advanced skills for the entry-level surgical technologist in the clinical setting. (Corequisites: 31-512-332, ST-Clinical 2; 31-512-331, ST-Surgical Procedures)
Welding

Technical Diploma - One Year

Offered at the Green Bay and Marinette campuses. For information in Green Bay: (920) 498-5444. For information in Marinette: (715) 735-9361. Toll-free: (800) 422-NWTC, ext. 5444.

Program Description
Welding prepares students to join metal by applying heat and pressure to join metal sections together to form a permanent bond. Welders plan layouts or work from blueprints, drawings, or other specifications.

Program Outcomes
• Be successfully employed in the welding industry.
• Perform procedures using plasma, carbon arc, oxyacetylene processes.
• Perform procedures using the Shielded Metal Arc Welding process (S.M.A.W).
• Perform procedures using the Gas Metal Arc Welding process (G.M.A.W).
• Perform procedures using the Gas Tungsten Arc Welding process (G.T.A.W).
• Perform procedures using the Flux Core Arc Welding process (F.C.A.W).
• Perform procedures using the Submerged Arc Welding process (S.A.W).
• Perform welding procedures using the Metal Core process.
• Interpret mechanical drawings.
• Fabricate projects from blueprints and sketches.
• Perform basic mathematical computations.
• Identify various ferrous and non-ferrous materials.
• Communicate with co-workers and supervisors.

Requirements for Program Entry
• NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
• High school diploma or equivalent. (Equivalency may be established through GED testing or other tests.)
• Students should have mastered basic math skills. For a description of basic math, see the Basic Education section of this catalog.

Certifications:
All NWTC Welding Program instructors are AWS/CWI (American Welding Society/Certified Welding Inspector) Instructors.

Employment Potential
A graduate of the program will have the potential for employment as a Maintenance Welder, Qualified Welder, Structural Welder, Welder/Fabricator, and Pipe Welder. In these jobs, the graduate will build and repair metal components using basic knowledge of blueprints, metallurgy, and layout while applying the major welding processes used by industry; and will be trained in code welding according to the 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 36 credits.

First Semester
Catalog No. Description Credits
10-804-106 Intro to College Math 3
31-442-301 Welding-Cutting/Visual 1
31-442-316 Welding-Shielded Metal Arc 5
31-442-317 Welding-Gas Metal Arc 5
31-442-331 Blueprint Reading I 3
31-442-332 Metal Fabrication I 2
Total 17

Second Semester
31-422-310 Metallurgy 2
31-442-321 Welding-Gas Tungsten Arc 5
31-442-327 Welding-Flux Core 5
31-442-333 Blueprint Reading II 2
31-442-334 Metal Fabrication II 2
31-801-386 Communicating Effectively 1
Total 17

Total Credits 36

This program is fully eligible for financial aid.
Please Note
• Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
• Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
• Descriptions of courses not found on this page can be found in the back of this catalog.

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.

31-442-316 WELDING-SHIELDED METAL ARC ...safety, SMAW equipment, materials, accessories, inspection, weld types, joints, and position.

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.

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.

31-442-327 WELDING-FLUX CORE ...safety, equipment, accessories, inspection and repairs, weld types and joint nomenclature, surface welds and all position fillet and groove welds.

31-442-331 BLUEPRINT READING I ...orthographic projection, sketching, dimensioning, section and auxiliary views, structural shapes, welding symbols, weld joint nomenclature, welding joint geometry, metric conversion and interpretation of fabrications from prints.

31-442-332 METAL FABRICATION I ...safety and introduction to basic metal fabrication tools and equipment utilizing precision measuring tools, geometric nomenclature, basic layout and assembly skills along with polygon construction, and triangulation from scale drawings.

31-442-333 BLUEPRINT READING II ...develop advanced blueprint reading skills to read and interpret moderate to advanced blueprints and shop drawings. (Prerequisite: 31-442-331, Blueprint Reading 1).

31-442-334 METAL FABRICATION II ...advanced metal fabrication tools developing assembly and sub-assemblies from working prints using various fabrication processes. Additionally, rigging and lifting, distortion control, and basic CNC programming will be incorporated. (Prerequisite: 31-442-332, Metal Fabrication 1)
Wood Tech

Technical Diploma - One Year

Offered at the Green Bay campus. For information: (920) 498-5444.
Toll-free: (800) 422-NWTC, ext. 5444.

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

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

Requirements for Program Entry
- NWTC requires an entrance skill inventory for all program students. Please see the Academic Skills Assessment section of this catalog for more information.
- High school diploma or equivalent (Equivalency may be established through GED testing or other tests.)
- 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.
- Carpentry/Cabinetmaker: builds cabinets; is capable in layout, frame, fabrication, assembly, and finish preparation; applies laminated plastic; and installs drawers and door hardware.
- Carpentry/Finish: applies interior wall covering and paneling, hangs doors, applies trim, and installs and adjusts cabinets and built-in furniture.
- Carpentry/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.
- Carpentry/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.
- Carpentry/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 Tech Technical Diploma is a one-year, two-semester program. Upon graduation, a student will have completed 34 credits.

First Semester

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>10-804-106</td>
<td>Intro to College Math</td>
<td>3</td>
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<tr>
<td>31-403-350</td>
<td>Blueprint Rdg-Construction</td>
<td>2</td>
</tr>
<tr>
<td>31-410-301</td>
<td>Wood Tech-Bldg Mat Est</td>
<td>2</td>
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<tr>
<td>31-410-311</td>
<td>Wood Techniques-Carpentry 1</td>
<td>5</td>
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<tr>
<td>31-410-312</td>
<td>Wood Techniques-Carpentry 2</td>
<td>5</td>
</tr>
<tr>
<td>31-806-354</td>
<td>Science-Wood Tech</td>
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Second Semester

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<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>31-403-360</td>
<td>Blueprint Rdg-Cabinety</td>
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<tr>
<td>31-409-310</td>
<td>Commercial Cabinet Finishes</td>
<td>1</td>
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<tr>
<td>31-409-321</td>
<td>Wood Techniques-Cabinety 1</td>
<td>5</td>
</tr>
<tr>
<td>31-409-322</td>
<td>Wood Techniques-Cabinety 2</td>
<td>5</td>
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<tr>
<td>31-801-385</td>
<td>Communicating-Writing</td>
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<tr>
<td>31-801-386</td>
<td>Communicating Effectively</td>
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<td><strong>Semester Total</strong></td>
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<td><strong>Total Credits</strong></td>
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</table>

Note
Intro to College Math, (10-804-106 ) must be taken during the student’s first semester at NWTC.

This program is fully eligible for financial aid.
Please Note

- Some courses have prerequisites (listed at the end of each course description, if applicable) that need to be taken prior to enrolling in those courses.
- Many courses are offered via our Flexible Learning Options (online, accelerated, ITV, video, weekend, and self-paced) and may be taken in any order as long as prerequisites are met. To find out which program courses are offered through Flexible Learning Options, go to www.nwtc.edu or consult a counselor, (920) 498-5444.
- Descriptions of courses not found on this page can be found in the back of this catalog.

Course Descriptions

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

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

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

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

31-409-321 WOOD TECHNIQUES-CABINETRY 1
...size and cut frame members for doweling, mortise and tenon, pocket drilling, calculate panel sizes and supports, assemble cabinet both upper & lower.

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

31-410-311 WOOD TECHNIQUES-CARPENTRY 1
...basics of tool and equipment safety, materials common to residential construction and proper application, framing theory of floor, wall, and roof systems.

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)