

# Industrial Division

Transfer Degree

Career Programs

## Construction Technology

- Building Trades

## Precision Production Technology

- General Machinist Diploma
- Tool and Die Technology Degree
- Welding Certificate

## Industrial Program Clusters

## Mechanical Technology

- Automotive Service Diploma
- Automotive Service Technology Degree
- Climate Control Mechanics Diploma
- Climate Control Technology Degree

## Engineering Related Technology

- Electromechanical Systems Technology
- Industrial Technology



# INDUSTRIAL TECHNOLOGY

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## CONSTRUCTION TECHNOLOGY

### Building Trades

## MECHANICAL TECHNOLOGY

**Automotive Service Diploma**  
**Automotive Service Technology Degree**  
**Climate Control Mechanics Diploma**  
**Climate Control Technology Degree**

## PRECISION PRODUCTION TECHNOLOGY

**General Machinist Diploma**  
**Tool and Die Technology Degree**  
**Welding Certificate**

## ENGINEERING RELATED TECHNOLOGY

**Electromechanical Systems Technology**  
**Industrial Technology**



## INDUSTRIAL DIVISION

### *University of Northern Iowa*

NIACC's Industrial Division and the University of Northern Iowa's Department of Industrial Technology have teamed up to provide excellent transfer and articulation agreements for students wishing to pursue a four-year degree. These four-year programs include: Construction Management, Electrical and Information Engineering Technology, Graphic Communications, Technology Management, Technology Education, and Manufacturing Technology.

The transfer options include both the Associate in Arts (A.A.) and Applied Science (A.A.S.) Degrees from NIACC. Differences in liberal arts and technical courses with these degrees will affect the remaining four-year degree requirements at UNI.

The articulation agreement, sometimes referred to as a 2+2 agreement, has been developed for many of the technology-related A.A.S. programs at NIACC. The agreement provides details on transfer of A.A.S. credits into the Technology Management as well as other majors in the Department of Industrial Technology at UNI.

For more details on these transfer options, please refer to the College Transfer Programs section of the NIACC catalog or contact our academic advisor.

## Automotive Service Technology

Automotive Service Technology is a 4 1/2 semester Associate in Applied Science (A.A.S.) Degree Program. The program is ASE/NATEF Master Certified. All eight instructional areas meet industry and educational standards as identified by Automotive Service Excellence and evaluated by the National Automotive Technicians Education Foundation:



- Engine Repair
- Automatic Transmission/Transaxle
- Manual Drive Train and Axles
- Suspension and Steering
- Brakes
- Electrical/Electronic Systems
- Heating and Air Conditioning
- Engine Performance

### A.A.S. Degree Requirements:

Completion of required curriculum, with a cumulative grade point average of 2.00 (C).

### Diploma Option Requirements:

An Automotive Service diploma is granted to a student who has completed at least thirty (30) semester hours of credit. A minimum cumulative grade point average of 2.00 (C) is required. Developmental courses are not used in calculating the cumulative grade point average for graduation.

### Entrance Advising:

Due to the highly technical nature of the Automotive programs and NIACC's commitment to giving students the best possible opportunity for success, students will be scheduled for advisement sessions with counselors and program personnel. In these sessions, the student's career plans, previous background, transcriptions, test scores, life experiences, and motivation will aid in designing a positive educational experience.

### Career Opportunities

Technicians are employed at automotive dealerships and independent service/repair facilities as general (line) technicians or as specialty technicians.



2004 National Winner of ASE Award of Excellence

### Required Courses/Suggested Schedule

#### First Year

##### First Term (Fall Semester)

AUTO-701	Introduction to Automotive Technology .....	3 s.h.
AUTO-702	Brake Systems .....	3 s.h.
AUTO-703	Suspension and Steering .....	3 s.h.
ENGL-701	Communications I .....	3 s.h.
INDU-701	Electrical Concepts .....	3 s.h.
MATH-710	Occupational Math I .....	2 s.h.
MATH-711	Occupational Math II .....	2 s.h.
		19 s.h.

##### Second Term (Spring Semester)

AUTO-710	Electrical Systems I .....	3 s.h.
AUTO-711	Engine Repair .....	3 s.h.
AUTO-712	Manual Drive Train & Axles .....	3 s.h.
INDU-705	Metal Processing & Metallurgy .....	2 s.h.
PHYS-701	Career Physics .....	4 s.h.
		15 s.h.

##### Third Term (Summer)

AUTO-715	Automotive Heating & Air Conditioning .....	3 s.h.
AUTO-720	Computerized Controls .....	3 s.h.
		6 s.h.

#### Second Year

##### Fourth Term (Fall Semester)

AUTO-801	Automatic Transmissions & Transaxles .....	5 s.h.
AUTO-802	Fuel Delivery Systems .....	3 s.h.
AUTO-810	Electrical Systems II .....	5 s.h.
BUSN-105	Human Relations .....	3 s.h.
		16 s.h.

##### Fifth Term (Spring Semester)

AUTO-820	Engine Performance Testing .....	5 s.h.
AUTO-821	Advanced Engine Performance .....	6 s.h.
ENGL-702	Communications II .....	3 s.h.
SDEV-110	Employment Strategies* .....	1 s.h.
		15 s.h.

**Total Program Hours** **71 s.h.**

\* Students obtaining an Automotive Service diploma must take Employment Strategies during the Spring Semester prior to graduation.

### Automotive Program Goal

Prepare individuals for employment in the automotive service industry by:

- Maintaining an environment that is conducive to learning.
- Offering curriculum that reflects current industry requirements.
- Delivering classroom instruction that encourages analytical thinking.
- Providing laboratory experience that utilizes technical and problem-solving skills.
- Promoting workmanship that meets or exceeds industry standards.

## Building Trades

Building Trades is a diploma program designed for individuals interested in a career in residential, commercial, or industrial building construction. Residential construction involves the building or remodeling of houses, condominiums, or apartment complexes. These structures are primarily wood frame construction. Commercial construction involves the building of single-story office buildings, stores, or restaurants. These structures often use light gauge metal framing in addition to wood construction. Industrial construction includes the building of factories, hospitals, schools, or multistory office buildings. These structures may be constructed of concrete, masonry, structural steel, or a combination of materials.

Building Trades Program students learn and develop skills through a combination of classroom-structured units, manipulative lab projects, and mentored job experiences. Classroom units provide students with necessary information on safety, blueprint reading, and craft work processes. Manipulative projects provide students the opportunity to learn craft skills at their own pace in a mock job site setting. The Building Trades Lab is a state-of-the-art facility where students learn in an individualized, competency-based setting, mastering skills by constructing manipulative projects. Mentored job experiences provide students the opportunity to apply learned skills as well as develop new skills while working under the guiding supervision of skilled contractors on job sites around North Iowa.

Incoming students are eligible to compete for scholarships through the Tom and Linda Schaefer Endowment Fund, which provides twelve \$1,000 scholarships each year for NIACC Building Trades students. Graduating students are eligible to compete for a \$500 scholarship awarded each semester by the Contractors' Advisory Association and the North Iowa Area Builders Exchange. The Contractors' Advisory Association has also created a financial assistance agreement to enable a contractor to repay a portion of a student's educational costs after the student has completed the program requirements. In exchange for a commitment to work for a Contractors' Advisory Association member contractor after graduation, a student may receive full or partial tuition assistance from the contractor. A diploma will be awarded upon successful completion of the prescribed curriculum with a grade point average of 2.00 (C) or better.

Courses are structured so that students may enter the Building Trades Program at any semester. For further information on the program, check out our web site at: <http://staff.niacc.edu/awermes/btrades/>.



### Required Courses/Suggested Schedule (Pending approval by the Iowa Department of Education.)

4-Semester Open-Entry Program - Students may enter Summer, Fall, or Spring. Below is the Summer entry course sequence. Fall and Spring entry contain same courses, but sequence may vary slightly.

#### First Year

##### First Term (Summer)

BUIL-701	Fundamentals of Carpentry I	3 s.h.
BUIL-702	Fundamentals of Carpentry II	3 s.h.
BUIL-705	Architectural Drawing	1 s.h.
COMP-701	Introduction to the PC	1 s.h.
SDEV-120	Cooperative Education Internship	2 s.h.
		10 s.h.

##### Second Term (Fall Semester)

BUIL-700	Construction Safety	2 s.h.
BUIL-703	Carpentry I and Lab	8 s.h.
SDEV-110	Employment Strategies	1 s.h.
SDEV-120	Cooperative Education Internship	2 s.h.
		13 s.h.

##### Third Term (Spring Semester)

BUIL-710	Carpentry II and Lab	8 s.h.
ENGL-701	Communications I	3 s.h.
SDEV-120	Cooperative Education Internship	2 s.h.
		13 s.h.

##### Fourth Term (Summer)

BUIL-715	Building Codes and Standards	2 s.h.
BUIL-720	Blueprint Reading and Estimating	3 s.h.
MATH-703	Building Trades Math	3 s.h.
SDEV-120	Cooperative Education Internship	2 s.h.
		10 s.h.

**Total Program Hours**

**46 s.h**

### Career Opportunities

Completion of this program prepares graduates to enter the construction industry as carpenters, with the basic skills to work in residential, commercial, or industrial construction. You will learn the skills necessary to perform work processes in:

- Concrete Framework
- Framing
- Exterior Finish
- Interior Finish
- Interior Systems

For specific information, contact NIACC at 641-423-1264 or 1-888-GO NIACC, and ask for the Industrial Division or Admissions.

## Climate Control Technology

### Climate Control (Residential/Commercial Heating and Air-Conditioning)

Today's Climate Control Technician installs, maintains, analyzes, and modifies heating and air-conditioning systems. The Climate Control curriculum provides opportunities to develop the skills necessary for entry into the HVAC (heating, ventilation, air-conditioning) industry.

The Climate Control curriculum allows the students to choose between completing a program in Climate Control Mechanics, which leads to a diploma with an emphasis in residential heating and air-conditioning or a program in Climate Control Technology, which leads to an Associate in Applied Science degree with an emphasis in commercial heating and air-conditioning. Both programs are designed around a common group of courses. A diploma will be awarded upon successful completion of the prescribed curriculum with a grade point average of 2.00 (C) or better. This recognition is granted to a person who has completed at least thirty (30) semester hours of credit.

The Climate Control Mechanics diploma program is designed to provide graduates with the basic knowledge and skills necessary for installing and servicing residential heating and air-conditioning systems. Theory of operation, as well as installation and service techniques, for several types of residential heating and air-conditioning systems is covered.

The Climate Control Technology Program prepares students for entry into the commercial and industrial heating, ventilation, and air-conditioning industry.

The program does this by training the student in the following areas: designing, testing, troubleshooting, and servicing residential, commercial, institutional, and industrial heating, ventilation, and air-conditioning systems.

### Entrance Advising

Due to the highly technical nature of this program and NIACC's commitment to giving students the best possible opportunity for success, students will be scheduled for advisement sessions with counselors and program personnel. In these sessions, the student's career plans, previous background, transcripts, test scores, life experiences, and motivation will aid in designing a positive education experience.

### Career Opportunities

Completion of the diploma program prepares graduates to enter the Climate Control Technology degree program or to enter the following occupations:

- Residential Heating/Air-Conditioning Service Mechanic
- Heating/Air-Conditioning Installer
- Heating/Air-Conditioning Parts Salesperson

Completion of the degree program prepares graduates to enter the following occupations:

- Commercial Heating/Air-Conditioning Service Technician
- Heating/Air-Conditioning Lab Technician
- Heating/Air-Conditioning Sales Engineer
- Heating/Air-Conditioning Parts Manager
- Manufacturer's Field Service Representative

For specific information contact the North Iowa Career Center or the NIACC Industrial Division.

### Required Courses/Suggested Schedule

#### First Year

##### First Term (Fall Semester)

ENGL-701	Communications I .....	3 s.h.
HVAC-701	Residential Heating Systems .....	4 s.h.
HVAC-702	Troubleshooting Heating Systems .....	3 s.h.
INDU-701	Electrical Concepts .....	3 s.h.
MATH-710	Occupational Math I .....	2 s.h.
MATH-711	Occupational Math II .....	2 s.h.
		17 s.h.

##### Second Term (Spring Semester)

HVAC-710	Air-Conditioning Principles .....	2 s.h.
HVAC-711	Residential Air-Conditioning Systems .....	4 s.h.
HVAC-712	Troubleshooting Air-Conditioning Systems .....	3 s.h.
PHYS-701	Career Physics .....	4 s.h.
		13 s.h.

#### Second Year

##### Third Term (Fall Semester)

COMP-101	Computer Applications .....	3 s.h.
	OR COMP-110 Introduction to Computers and Information Systems (3 s.h.)	
HVAC-801	Technical Graphics .....	2 s.h.
HVAC-802	Metal Fabrication .....	2 s.h.
HVAC-803	Commercial Heating Systems .....	5 s.h.
HVAC-810	Advanced Control Systems .....	4 s.h.
		16 s.h.

##### Fourth Term (Spring Semester)

BUSN-105	Human Relations .....	3 s.h.
ENGL-702	Communications II .....	3 s.h.
HVAC-811	Air Distribution .....	3 s.h.
HVAC-812	Commercial Air-Conditioning Systems .....	5 s.h.
HVAC-815	Energy Management .....	3 s.h.
SDEV-110	Employment Strategies* .....	1 s.h.
		18 s.h.

**Total Program Hours**

**64 s.h.**

\* Students obtaining a Climate Control Mechanics diploma must take Employment Strategies during the Spring Semester prior to graduation.



## Electromechanical Systems Technology

Electromechanical Systems Technology is an Associate in Applied Science Degree Program designed to prepare the graduate for immediate employment as electronic, electrical, and mechanical maintenance personnel in manufacturing settings.

### Certifications

Students may earn recognition as a Certified Electronic Technician Associate Level (CETa) by the Electronic Technicians Association (ETA). To earn such recognition, the student must pass the National Certified Electronic Technician exam. The cost of the exam (\$60) is the student's responsibility.

### Entrance Requirements

Students must either have completed Essentials of Math or higher OR score 16 or higher on ACT math OR have a COMPASS score at the Beginning Algebra level.

### Self-Paced Courses

Several courses in the Electromechanical Systems Technology Program are offered in an instructor-supervised/student-paced format. See course descriptions for details concerning specific course status. Much of the instruction in these courses is computer-based using software available only in the Electromechanical Systems Technology Labs on campus. Students enrolled in such courses should expect to spend 25-30 hours in the Electromechanical Systems Technology Lab for each semester hour of the course. For example, 91:175 DC/AC Theory is a 3-semester-hour course. The student enrolled in that course should expect to spend 75-90 hours (5-6 hours per week) in the Electromechanical Systems Technology Lab to complete the course. While a suggested schedule appears on this page, the use of instructor-supervised/student-paced course work allows the student much more flexibility in scheduling.

### College Transfer Option

Through an articulation agreement with the University of Northern Iowa, graduates of the Electromechanical Systems Technology Program may continue their education by transferring to baccalaureate programs in such industrial technology fields as manufacturing, electromechanical systems, engineering technology, or supervision and management. Help of a NIACC counselor or program instructor is advised.

### Career Opportunities

Completion of this program prepares graduates to enter the following occupations:

- Electromechanical Technician
- Industrial Maintenance Technician
- Electronics Technician
- Industrial Process Control Technician
- Instrumentation Technician
- Control Systems Technician
- Computer Automated Process Control Technician

For specific information contact the North Iowa Career Center or the NIACC Industrial Division.



### Required Courses/Suggested Schedule

#### First Year

##### First Term (Fall Semester)

BUSN-105 Human Relations .....	3 s.h.
OR PSYC-101 Introduction to Psychology (3 s.h.)	
EMST-701 Introduction to Tech Computing & CAD .....	3 s.h.
EMST-702 DC/AC Theory .....	3 s.h.
EMST-703 Fluid Power .....	3 s.h.
ENGL-701 Communications I .....	3 s.h.
OR ENGL-104 Composition I (3 s.h.)	
MATH-710 Occupational Math I .....	2 s.h.
MATH-711 Occupational Math II .....	2 s.h.
OR MATH-121 College Algebra (4 s.h.)	
	19 s.h.

##### Second Term (Spring Semester)

EMST-710 Industrial Control Systems .....	3 s.h.
EMST-711 Analog Devices & Circuits .....	4 s.h.
EMST-712 Digital Electronics .....	3 s.h.
ENGL-702 Communications II .....	3 s.h.
OR Composition II (3 s.h.)	
	13 s.h.

##### Third Term (Summer)

EMST-801 Electromechanical Internship .....	2 s.h.
	2 s.h.

#### Second Year

##### Fourth Term (Fall Semester)

EMST-802 Introduction to Programmable Logic Controllers .....	3 s.h.
EMST-803 Advanced PLCs and System Integration .....	3 s.h.
EMST-815 Servos and Drives .....	2 s.h.
EMST-817 Industrial Instrumentation .....	4 s.h.
PHYS-120 General Physics .....	4 s.h.
OR PHYS-110 Principles of Physics (4 s.h.)	
OR CHEM-101 Introductory Chemistry (4 s.h.)	
	16 s.h.

##### Fifth Term (Spring Semester)

EMST-805 Maintenance Shop Operations .....	3 s.h.
EMST-816 Computer Automated Manufacturing .....	3 s.h.
EMST-820 Facilities Maintenance Management .....	4 s.h.
PHYS-121 General Physics II .....	4 s.h.
OR PHYS-110 Principles of Physics (4 s.h.)	
OR CHEM-101 Introductory Chemistry (4 s.h.)	
SDEV-110 Employment Strategies .....	1 s.h.
	15 s.h.

**Total Program Hours**

**65 s.h.**

## General Machinist

General Machinist is a two-semester diploma program designed to provide in-depth study and considerable hands-on skills in the machine processing of a variety of metals. This one-year program provides the foundation for the Associate in Applied Science Program, Tool & Die Technology.

Students become proficient in the operation of manual mills, lathes, grinders, drills, and saws as they complete increasingly complex projects while holding tight tolerances. Various pieces of precision measuring equipment (optical comparator, coordinate measuring machine, etc.) are used to check quality. Additional work in blueprint reading, heat-treating, and computer numerical controlled (CNC) machining is required to complete the General Machinist Program.

Upon satisfactory completion of this program, students are awarded a NIACC diploma. Program graduates have the option to continue into the A.A.S. Tool and Die Technology Program or immediately begin employment in an area of machine shop or manufacturing facility producing a wide variety of machine parts.



## Tool and Die Technology

Tool and Die Technology is a five-semester degree program which is a continuation of the General Machinist Diploma Program. The Tool and Die Technology Program builds upon the previous studies with an in-depth study of high-precision industrial dies and die components, progressive dies, and plastics industry molds. A portion of the program is devoted to producing computer-aided drawings (CAD) of molds and dies, and then using computer-aided manufacturing (CAM) software to generate computer numerical control (CNC) machine language. Students operate CNC machine tools to produce many of their second year projects.

Upon satisfactory completion of this program, students are awarded an Associate in Applied Science Degree. Program graduates are prepared to work in the "tool room" of area manufacturers or to work for a specialty tool and die shop producing dies and molds for a large variety of production machines in our area.

### Entrance Advising

Due to the highly technical nature of this program and NIACC's commitment to giving students the best possible opportunity for success, students are scheduled for advisement sessions with counselors and/or program personnel. In these sessions, the student's career plans, previous background, transcripts, test scores, life experiences, and motivation aid in designing a positive educational experience.

### Required Courses/Suggested Schedule

#### First Year

##### First Term (Fall Semester)

COMP-702 Computer Orientation.....	1 s.h.
ENGL-701 Communications I.....	3 s.h.
MATH-710 Occupational Math I.....	2 s.h.
MATH-711 Occupational Math II.....	2 s.h.
TLDI-701 Blueprint Reading I.....	1 s.h.
TLDI-703 Machine Tool Practices I.....	9 s.h.
	18 s.h.

##### Second Term (Spring Semester)

PHYS-701 Career Physics.....	4 s.h.
TLDI-702 Blueprint Reading II.....	1 s.h.
TLDI-704 Machine Tool Practices II.....	7 s.h.
TLDI-705 Fundamentals of CNC.....	3 s.h.
	15 s.h.

##### Third Term (Summer)

TLDI-801 Statistical Process Control (SPC).....	1 s.h.
TLDI-802 Tool and Die Making I.....	5 s.h.
TLDI-803 Fundamentals of EDM.....	2 s.h.
TLDI-804 Computer-Aided Drafting (CAD).....	2 s.h.
TLDI-805 3-D Modeling.....	2 s.h.
	12 s.h.

#### Second Year

##### Fourth Term (Fall Semester)

BUSN-105 Human Relations.....	3 s.h.
INDU-710 Welding.....	2 s.h.
TLDI-810 Tool and Die Making II.....	8 s.h.
TLDI-811 Computer-Aided Manufacturing (CAM).....	3 s.h.
SDEV-110 Employment Strategies.....	1 s.h.
	17 s.h.

##### Fifth Term (Spring Semester)

ENGL-702 Communications II.....	3 s.h.
TLDI-812 Plastics Materials and Methods.....	1 s.h.
TLDI-813 Mold Making I.....	9 s.h.
TLDI-814 Advanced CNC and EDM.....	2 s.h.
	15 s.h.

**Total Program Hours** **77 s.h.**

### Career Opportunities

#### General Machinist

- Operate and set up CNC mills and lathes
- Maintenance work
- Operate and set up manual equipment

#### Tool and Die Technology

- Mold builder
- Operate/set up complex CNC equipment
- Tool maker
- Die maker
- CNC programmer
- Quality Control Inspector
- Gage maker
- Instrument maker
- CAD/CAM technician

## Industrial Technology

The AAS degree graduate in Industrial Technology provides a broad technical background in a variety of disciplines related to industry. Industrial technologists work with management teams, entry-level supervisors, and technicians in providing manufacturing process and production solutions to ensure the success of our industries. The broad-based programming further provides the student the mobility to move throughout a variety of industrial areas. Graduates of this program have the option of employment upon graduation or articulation of the program to a four-year institution.

Upon completion of the first year of the program, students may be awarded a NIACC diploma. To be awarded a diploma, students must successfully complete a 30-semester-hour program of study, to include English and Mathematics general education requirements.

Upon completion of the two-year curriculum with a grade point average of 2.00 (C), the student is awarded an Associate in Applied Science in Industrial Technology. Students who know they wish to pursue a four-year degree and want to meet general education requirements of transfer institutions should pursue the A.A. degree. This will necessitate a slightly different curriculum.

The schedule shown on this page is a suggested program of study. Students may choose to change the sequence of courses to suit their needs. Please consult with a NIACC Counselor to develop a program of study that works for you.

### Career Opportunities

The intent of this program is to provide a flexible framework targeted primarily to individuals interested in or already employed in the manufacturing field. Many individuals taking this course work are focusing their efforts toward employment in the area of Industrial Maintenance and Repair. Others pursue careers in direct manufacturing.

The program enables the individual to tailor a diploma and/or associate degree program based on his/her skill needs and the needs of the company.

### Required Courses/Suggested Schedule

#### First Year

##### First Term (Fall Semester)

BUIL-700	Construction Safety.....	2 s.h.
ENGL-101	Composition and Speech I.....	4 s.h.
	OR ENGL-701 (3 s.h.) and ENGL-702 (3 s.h.)	
INDU-710	Welding.....	2 s.h.
MATH-121	College Algebra.....	4 s.h.
	OR MATH-710 (2 s.h.) and MATH-711 (2 s.h.)	
TLDI-804	Computer-Aided Drafting.....	2 s.h.
		14 s.h.

##### Second Term (Spring Semester)

EMST-703	Fluid Power.....	3 s.h.
INDU-701	Electrical Concepts.....	3 s.h.
INDU-715	Manufacturing Processes I.....	2 s.h.
PHYS-701	Career Physics.....	4 s.h.
	OR PHYS-120 (4 s.h.)	
		12 s.h.

#### Second Year

##### Third Term (Fall Semester)

Industrial Technology Electives**	.....	9 s.h.
Electives	.....	8 s.h.
		17 s.h.

##### Fourth Term (Spring Semester)

Industrial Technology Electives**	.....	9 s.h.
Electives	.....	8 s.h.
		17 s.h.

**Total Program Hours** **60-62 s.h.**

\*\* Industrial Technology Electives to be taken from existing programs in NIACC's Industrial Technology Division. Students must meet existing course prerequisites. Students may also elect a specialization by taking all electives from a single program. Specializations include:

- Electromechanical Systems Technology
- Tool & Die Technology
- Climate Control Technology
- Building Trades
- Automotive Technology

Students must have approval of program faculty for specializations.

**This program will be available Fall 2005 pending Iowa Department of Education approval.**

## Welding - Evening Program

The Welding Program is designed for industry and individuals seeking personal skill development. Students are first exposed to theory and demonstrations, along with laboratory experiences. This is followed with an open lab to allow students additional laboratory experience in order to achieve the program's outlined competencies. Upon satisfactory completion of the prescribed curriculum with an average grade point of 2.00 (C), the student is awarded a certificate.



### Required Courses/Suggested Schedule

A student may take the program in either order.

#### First Year

##### First Term

WELD-701 Welding Symbols & Blueprint Reading .....	2 s.h.
WELD-703 Oxyacetylene Welding & Cutting; Gas Tungsten Arc Welding .....	3 s.h. 5 s.h.

##### Second Term (Spring Semester)

WELD-702 Welding Symbols & Blueprint Reading II .....	2 s.h.
WELD-704 Shielded Metal Arc & Gas Metal Arc.....	3 s.h. 5 s.h.

**Total Program Hours** **10 s.h.**

### Career Opportunities

Those currently involved in the following areas will benefit from the program:

- Maintenance
- Farm or Ag Related
- Automotive
- Construction
- General Industrial
- Hobbies or Backyard