

# Engineering Technologies

Students majoring in engineering technologies may pursue the associate of applied science degree in a variety of engineering technology programs such as: applied industrial technology, civil engineering technology, design engineering technology, electric power utility technology, electrical engineering technology, electrical maintenance technology, electronic engineering technology, environmental, health and safety technology, heating, ventilation and air conditioning technology and mechanical engineering technology. Engineering technology is a field in which scientific principles and techniques are applied toward solutions of problems in business and industry. The engineering technician typically works as a member of a professional team (technician/technologist), assisting the engineer and coordinating work performed by skilled workers. Areas of responsibility include: research, design, development, supervision, sales and production. Applied industrial technology technicians use similar abilities, with emphasis on areas of supervision, operations and skilled maintenance in a variety of areas. These areas include health care facilities, educational institutions and industrial settings.

In addition to these programs, the engineering technologies division offers a number of career enhancement certificates designed to enhance specific sets of skills.

## **Bachelor's degree:**

In most of the associate degree programs, all or nearly all courses may be applied toward a bachelor's degree in technology. Bachelor's degree requirements and course transferability are controlled by the institution to which the student plans to transfer.

## **High school students:**

High school students graduating from a *college tech prep* program can get a head start on their engineering technology associate degrees.

For more information, please call Stark State's Office of Admissions/Student Services at 330-966-5450.



# Applied Industrial Technology

The applied industrial technology degree program offers many career paths from industrial or facilities supervision to skilled mechanical or electrical maintenance. The comprehensive curriculum includes both basic and advanced manufacturing techniques as well as skilled mechanical and electrical maintenance principles and applications.

The program provides knowledge of traditional manufacturing methods as well as state-of-the-art and emerging technologies. Areas of expertise include

robotics, precision machining, CNC, welding, hydraulics/pneumatics, pumps, pipefitting, mechanical and electrical skilled maintenance, computer control automation and advanced materials and processes.

The Stark State program is designed in a building block style which includes apprenticeship level courses. These courses provide the base to which students can add additional courses to allow completion of the associate degree program.

## SUGGESTED COURSE SEQUENCE

|                     |   | <b>Credit<br/>Hours</b> |
|---------------------|---|-------------------------|
| <b>Semester I</b>   |   |                         |
| ECA122              | Computer Applications for Technical Professionals | 3                       |
| MTH101              | Introduction to Algebra                           | 4                       |
| ENG124              | College Composition †                             | 3                       |
| MET123              | Material Science                                  | 2                       |
| MST121              | Blueprint Reading                                 | 2                       |
|                     |   | 14                      |
| <b>Semester II</b>  |   |                         |
| MTH121              | College Algebra and Trigonometry                  | 4                       |
| MST134              | Hydraulic and Pneumatic Systems*                  | 6                       |
| EST130              | Electrical Circuits and Devices                   | 4                       |
| MST131              | Statistical Process Control Charts                | 2                       |
|                     |   | 16                      |
| <b>Semester III</b> |   |                         |
| ENG221              | Technical Report Writing                          | 3                       |
| PHY121              | Physics I   | 4                       |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3                       |
| IET228              | Introduction to Robotics                          | 2                       |
| MET225              | Manufacturing Processes                           | 3                       |
|                     |   | 15                      |
| <b>Semester IV</b>  |   |                         |
| MST221              | Mechanical Drive Components                       | 3                       |
|                     | Arts/Humanities/Social Sciences Elective**        | 3                       |
|                     | Technical Electives***                            | 13                      |
|                     |   | 19                      |

## 64 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* May also be taken as two 8-week courses: MST122, MST123.

\*\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS221, BUS222, PSCI21

\*\*\* Select a minimum of 13 hours from AIT122, AIT123, AIT124, AIT125, AIT126, AIT127, AIT128, AIT129, AIT130, AIT131, AIT221, DET125, EET142, EET143, EST133, EST134, HVC124, HVC230, IET223, IET270, MST124, MST125, MST126, MST127, MST128, MST133, MST135, MST225.

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Applied Industrial Technology

## One-Year CNC Technical Certificate

This one-year state-accredited technical certificate is designed to prepare the student with the appropriate skills needed to work in today's world of computer numeric controlled precision machining. This program is designed for both the individual returning to add to their existing skills and those entering the CNC precision machining field for the first time. Upon successful completion of the CNC one-year technical certificate program, the individual will have approximately one half the necessary credits towards an associate of applied science in applied industrial technology.

### SUGGESTED COURSE SEQUENCE

|                    |   | <b>Credit<br/>Hours</b> |
|--------------------|---|-------------------------|
| <b>Semester I</b>  |   |                         |
| MTH121             | College Algebra and Trigonometry I                | 4                       |
| AIT122             | Machine Tools                                     | 3                       |
| IET270             | Dimensional Metrology and Inspection I            | 3                       |
| MST121/DET121      | Blueprint Reading or Engineering Drawing          | 2/3                     |
|                    |   | <hr/> 12/13             |
| <b>Semester II</b> |   |                         |
| DET125             | Basic AutoCad                                     | 3                       |
| AIT123             | Advanced Machine Tools                            | 4                       |
| IET123             | CNC Programming                                   | 4                       |
| ECA122             | Computer Applications for Technical Professionals | 3                       |
|                    |   | <hr/> 14                |
| <b>Summer</b>      |   |                         |
| AIT221             | Advanced CNC                                      | 4                       |
| MET123             | Material Science                                  | 2                       |
|                    |   | <hr/> 6                 |

### 32/33 TOTAL CREDIT HOURS

*A graduate of this program will earn a state-accredited certification.*

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Civil Engineering Technology

Civil engineering technicians assist civil engineers in planning, designing and constructing highways, bridges, dams, tunnels, airports, water supply systems, buildings and other structures.

During the planning stages of a project, technicians estimate costs, prepare specifications for materials and work in design, drafting or surveying. During construction, they assist the contractor in scheduling, inspecting for conformance to blueprints and specifications and numerous other responsibilities.

The civil engineering technician graduating from Stark State College of Technology will have a basic theoretical

background covered in the classroom. This background will then be enhanced by a series of strong practical laboratory applications which include both indoor and outdoor settings. Civil engineering technology students will study and use current computer programs in estimating and structural design as well as other areas.

**The civil engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in civil engineering technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
| CET121              | Building Materials and Construction Methods       | 3               |
| CET122              | Architectural Drafting I                          | 3               |
| ETD121              | Engineering Technology Seminar                    | 1               |
|                     |   | 18              |
| <b>Semester II</b>  |   |                 |
| MTH122              | College Algebra and Trigonometry II               | 3               |
| PHY122              | Physics II  | 4               |
| MET124              | Statics and Strengths of Materials                | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| CET125              | Soil Mechanics                                    | 3               |
| CET124              | Highway and Map Drawing                           | 2               |
|                     |   | 19              |
| <b>Semester III</b> |   |                 |
| ENG221              | Technical Report Writing                          | 3               |
| MTH221              | Concepts of Calculus                              | 3               |
| CET227              | Surveying I                                       | 3               |
| CET223              | Structural Design I                               | 3               |
| CET222              | Concrete and Asphalt Testing                      | 3               |
| CET232              | Land Planning and Design                          | 3               |
|                     |   | 18              |
| <b>Semester IV</b>  |   |                 |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| CET226              | Estimating  | 3               |
| CET224              | Structural Design II                              | 3               |
| CET225              | Site and Building Service Systems                 | 3               |
| CET228              | Surveying II                                      | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     |   | 18              |

## 73 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Civil Engineering Technology

## Architectural Option

This program will provide students with the opportunity to analyze the role of architecture in the building construction industry. It will develop their understanding of the design process and the relationship of the architect, engineer and contractor.

In the classroom, laboratory and field, students will be introduced to the fundamentals of both manual and computer-aided drafting, fundamentals of design, building construction, mechanical equipment and the basic engineering of structures. The program emphasizes the establishment of basic knowledge of the aesthetics of architecture, marketable talent in drafting/design and an understanding of the principles of engineering as they relate to architecture.

Graduates of this technical major may work as technicians in architectural and engineering offices, construction estimating, general contracting, drafting, building supply firms, public agencies and as technical salespeople.

**The civil engineering technology program is accredited by the technology accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in civil engineering technology.

### SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
| CET121              | Building Materials and Construction Methods       | 3               |
| CET122              | Architectural Drafting I                          | 3               |
| ETD121              | Engineering Technology Seminar                    | 1               |
|                     |   | 18              |
| <b>Semester II</b>  |   |                 |
| MTH122              | College Algebra and Trigonometry II               | 3               |
| PHY122              | Physics II  | 4               |
| MET124              | Statics and Strengths of Materials                | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| CET123              | Architectural Drafting II                         | 3               |
| DET125              | Basic AutoCAD                                     | 3               |
|                     |   | 20              |
| <b>Semester III</b> |   |                 |
| ENG221              | Technical Report Writing                          | 3               |
| MTH221              | Concepts of Calculus                              | 3               |
| CET227              | Surveying I                                       | 3               |
| CET223              | Structural Design I                               | 3               |
| CET232              | Land Planning and Design                          | 3               |
| CET235              | Construction Management, Job Cost and Safety      | 3               |
|                     |   | 18              |
| <b>Semester IV</b>  |   |                 |
| COM121 / COM123     | Effective Speaking or Inter-group Communications  | 3               |
| CET226              | Estimating  | 3               |
| CET225              | Site and Building Service Systems                 | 3               |
| CET233              | Architectural Design                              | 3               |
| CET234              | A/E CAD   | 2               |
|                     | Arts/Humanities/Social Sciences Electives*        | 3               |
|                     |   | 17              |

### 73 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Civil Engineering Technology

## Construction Management Option

This program will provide students with the opportunity to study the managerial and technological facets of the residential and commercial construction industry. By combining technical instruction concerning construction with management concepts, the program will prepare students to take on a supervisory role in the field. It will develop their understanding of current building codes, construction materials and processes, principles of design, and construction safety.

In the classroom, laboratory and field, students will be introduced to the fundamentals of design, building construction and the basic engineering of structures.

This background will then be further enhanced by exposing students to such topics as interpreting construction documents, the importance of communication skills, project scheduling, as well as understanding job cost reports.

Graduates of this technical major may work as technicians in project management, construction estimating, general contracting, specification writing, project scheduling, construction sales, public agencies and project inspecting.

A graduate of this program will earn an associate of applied science degree in civil engineering technology.

### SUGGESTED COURSE SEQUENCE

|                     |   | <b>Credit<br/>Hours</b> |
|---------------------|---|-------------------------|
| <b>Semester I</b>   |   |                         |
| MTH121              | College Algebra and Trigonometry I                | 4                       |
| PHY121              | Physics I   | 4                       |
| CET121              | Building Materials and Construction Methods       | 3                       |
| CET237              | Interpreting Construction Documents               | 2                       |
| DET125              | Basic AutoCAD                                     | 3                       |
| ETD121              | Engineering Technology Seminar                    | 1                       |
|                     |   | 17                      |
| <b>Semester II</b>  |   |                         |
| MTH122              | College Algebra and Trigonometry II               | 3                       |
| PHY122              | Physics II  | 4                       |
| MET124              | Statics and Strengths of Materials                | 4                       |
| ECA122              | Computer Applications for Technical Professionals | 3                       |
| CET125/CET222       | Soil Mechanics or Concrete and Asphalt Testing    | 3                       |
|                     |   | 17                      |
| <b>Semester III</b> |   |                         |
| ENG124              | College Composition †                             | 3                       |
| MTH221              | Concepts of Calculus                              | 3                       |
| CET227              | Surveying I                                       | 3                       |
| CET223              | Structural Design I                               | 3                       |
| CET232              | Land Planning and Design                          | 3                       |
| CET235              | Construction Management, Job Cost and Safety      | 3                       |
|                     |   | 18                      |
| <b>Semester IV</b>  |   |                         |
| ENG221              | Technical Report Writing                          | 3                       |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3                       |
| CET225              | Site and Building Service Systems                 | 3                       |
| CET239              | Building Code Applications                        | 2                       |
| CET226              | Estimating  | 3                       |
|                     | Arts/Humanities/Social Sciences Elective*         | 3                       |
|                     |   | 17                      |

### 69 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Civil Engineering Technology

## Surveying Option

Today's surveying technician must have skills in many areas, including mathematics, law, history, methods of measurement, graphics, global positioning and site planning.

A surveying technician assists professional surveyors in performing subdivision design, property and topographic surveys, establishing control for aerial surveying, preparing legal descriptions and controlling construction projects.

In the classroom, laboratory and field, we introduce students to the fundamentals of surveying, equipment usage, graphics (both manual and computerized), subdivision planning, control surveys, global positioning principles, subdivision design and legal principles of boundary location.

The graduate will have theoretical background and strong practical applications experience.

Upon completion of the surveying major, graduates are qualified to work in the following areas: establishing land boundaries, researching deeds, drafting, land development, global positioning surveying, construction layout and control, collection of data for charts and maps, and preparation of legal descriptions.

**The civil engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in civil engineering technology.

### SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
| CET121              | Building Materials and Construction Methods       | 3               |
| CET227              | Surveying I                                       | 3               |
| ETD121              | Engineering Technology Seminar                    | 1               |
|                     |   | 18              |
| <b>Semester II</b>  |   |                 |
| MTH122              | College Algebra and Trigonometry II               | 3               |
| PHY122              | Physics II  | 4               |
| MET124              | Statics and Strengths of Materials                | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| CET124              | Highway and Map Drawing                           | 2               |
| CET228              | Surveying II                                      | 3               |
|                     |   | 19              |
| <b>Semester III</b> |   |                 |
| ENG221              | Technical Report Writing                          | 3               |
| MTH221              | Concepts of Calculus                              | 3               |
| CET222              | Concrete and Asphalt Testing                      | 3               |
| CET232              | Land Planning and Design                          | 3               |
| CET231              | Legal Principles of Surveying                     | 3               |
| DET125              | Basic AutoCAD                                     | 3               |
|                     |   | 18              |
| <b>Semester IV</b>  |   |                 |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| CET226              | Estimating  | 3               |
| CET229              | Surveying III                                     | 3               |
| CET221              | Surveying Graphics                                | 3               |
| CET236              | Global Positioning System                         | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     |   | 18              |

### 73 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Design Engineering Technology

Design engineering technicians prepare detailed drawings based on rough sketches, specifications and calculations. They determine the strength, type and quantity of materials and give the dimensions necessary to make detailed parts or assemblies.

Design engineering technicians might specialize in the design of tools, machines or products for structural, electrical, civil and mechanical systems and represent ideas graphically through traditional drawings or computer-aided design (CAD) systems.

The design engineering technology program is regularly evaluated and approved or revised by an

advisory committee of professionals who represent local businesses and industries. This ongoing evaluation process ensures that design engineering technology students receive state-of-the-art education that will help them get good jobs.

**The program in design engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in design engineering technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| DET121              | Engineering Drawing                               | 3               |
| ENG124              | College Composition †                             | 3               |
| ETD121              | Engineering Technology Seminar                    | 1               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
|                     |   | 15              |
| <b>Semester II</b>  |   |                 |
| DET122              | Descriptive Geometry                              | 3               |
| DET124              | Working Drawings                                  | 3               |
| DET125              | Basic AutoCAD                                     | 3               |
| MTH122              | College Algebra and Trigonometry II               | 3               |
| PHY122              | Physics II  | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
|                     |   | 19              |
| <b>Semester III</b> |   |                 |
| DET231              | Tool Design                                       | 3               |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| MET225/AIT122       | Manufacturing Processes or Machine Tools II       | 3               |
| MET124              | Statics and Strengths of Materials                | 4               |
| MTH221              | Concepts of Calculus                              | 3               |
|                     | Design Elective I (CAD)**                         | 3               |
|                     |   | 19              |
| <b>Semester IV</b>  |   |                 |
| DET223              | Kinematics  | 3               |
| MET228              | Machine Design                                    | 4               |
| DET226              | Geometric Dimensioning and Tolerancing            | 2               |
| ENG221              | Technical Report Writing                          | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     | Design Elective II (CAD)**                        | 3               |
|                     |   | 18              |

### 71 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121

\*\* Design Electives: DET126, DET131, DET230



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Electric Power Utility Technology\*

## Line Worker Technician or Substation Technician Options

The local and regional electric utility industry has experienced a shortage of candidates for employment. Technology and required employee job skills within the electric utility industry are constantly changing; increasing the demand for a skilled workforce. The ultimate goal of the electric utility industry is to attract college level trainees to the electric utility industry. Graduates of the Stark State electric utility technology program can expect to be actively recruited.

This program is designed to give students the advantage required for easy acquisition of desirable long-term employment in the electric utility industry. Graduates of this program will be more employable and be able to

command a higher starting wage rate than the typical entry-level employee. The graduating student will also enjoy an increased likelihood of promotion through an enhanced ability to be a productive addition to a company team. The electric power utility technology degree program will prepare graduates for employment opportunities in a variety of electrical fields, with an emphasis in the line worker area. (The overhead line technology curriculum prepares the student for hands-on, transmission support system installation/maintenance and electrical substation maintenance.)

A graduate of this program will earn an associate of applied science degree.

### SUGGESTED COURSE SEQUENCE

|                     |  | Credit<br>Hours |
|---------------------|--|-----------------|
| <b>Semester I</b>   |  |                 |
| ECA122              | Computer Applications for Technical Professionals            | 3               |
| MTH101              | Introduction to Algebra                                      | 4               |
| ENG124              | College Composition †  | 3               |
| EUT121/EUT123       | Overhead Line Technology I or<br>Substation Technology I     | 6               |
|                     |  | 16              |
| <b>Semester II</b>  |  |                 |
| MTH121              | College Algebra and Trigonometry I                           | 4               |
| EET120              | DC Circuit Analysis  | 4               |
| COM123              | Inter-group Communications                                   | 3               |
| EUT122/EUT124       | Overhead Line Technology II or<br>Substation Technology II   | 6               |
|                     |  | 17              |
| <b>Semester III</b> |  |                 |
| ETD202              | Engineering Technology Division –<br>Independent Study       | 2               |
|                     |  | 2               |
| <b>Semester IV</b>  |  |                 |
| PHY101              | Principles of Physics  | 4               |
| BUS122              | Basic Economics  | 3               |
| EET122              | AC Circuit Analysis  | 4               |
| ACC130              | Business Law and Ethics                                      | 3               |
| EUT221/EUT224       | Overhead Line Technology III or<br>Substation Technology III | 6               |
|                     |  | 20              |
| <b>Semester V</b>   |  |                 |
| EET226              | Transmission and Distribution                                | 3               |
| ENG221              | Technical Report Writing                                     | 3               |
| EET128              | NEC and Electrical Systems Design                            | 2               |
| EST129              | Switchgear, Transformers and Controls                        | 2               |
| EUT222/EUT225       | Overhead Line Technology IV or<br>Substation Technology IV   | 7               |
|                     |  | 17              |

### 72 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Enrollment and participation in this program is at the sole discretion of the FirstEnergy Corp.



*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Electrical Engineering Technology

Our society is becoming increasingly dependent on electrical energy. Consumer products and the industrial processes required to produce them have been greatly influenced by the application of electrical and electronic technology. This has had an impact on research, development, testing, manufacturing and maintenance of existing and new products. This expanded "high-tech" effort has resulted in an increasing need for highly trained technicians in all areas of technology.

Electrical engineering technology is concerned with the generation, transmission and distribution of electrical power; its application to power and control industrial processes and wiring systems design.

Electrical technicians are part of the engineering team needed to fulfill the work in this broad and challenging field. The electrical engineering technician must have theoretical knowledge of the field and extensive hands-on experience with laboratory techniques and equipment.

Job opportunities as an electrical engineering technician include: transmission and distribution planner, industrial process control technician, electrical contractor, project manager, electrical technician, engineering assistant and service technician.

The application of electronics to electrical systems control has greatly influenced the educational background that electrical engineering technicians need. As a result, the electrical engineering technology program includes a number of electronic courses, as well as the traditional courses in electrical power, machines and control.

**The electrical engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in electrical engineering technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| EET120              | DC Circuit Analysis                               | 4               |
| ETD121              | Engineering Technology Seminar                    | 1               |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
|                     |   | 19              |
| <b>Semester II</b>  |   |                 |
| EET122              | AC Circuit Analysis                               | 4               |
| EET123              | Electronic Devices and Circuits                   | 4               |
| EET125              | Circuit Manufacturing Techniques                  | 1               |
| EET126              | Electrical Machines                               | 4               |
| ECA128              | Visual Basic Programming                          | 3               |
| MTH122              | College Algebra and Trigonometry II               | 3               |
|                     |   | 19              |
| <b>Semester III</b> |   |                 |
| DET125              | Basic AutoCad                                     | 3               |
| EET128              | NEC and Electrical Systems Design                 | 2               |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| EET227              | PLCs and Industrial Controls I                    | 3               |
| MTH221              | Concepts of Calculus                              | 3               |
| ENG221              | Technical Report Writing                          | 3               |
|                     |   | 17              |
| <b>Semester IV</b>  |   |                 |
| EET226              | Transmission and Distribution                     | 3               |
| EET228              | PLCs and Industrial Controls II                   | 3               |
| EET232              | Industrial Electronics                            | 3               |
| EET233              | Technical Project – Electrical                    | 1               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
| EET129              | Optics  | 2               |
|                     |   | 15              |

## 70 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121.



*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Electrical Engineering Technology

## Electro-Mechanical Option

This program will allow the student an in-depth study of the main principles and applications of electrical engineering technology with an emphasis on mechanical engineering technology fundamentals. In today's competitive world, electrical engineering technicians with mechanical skills are in demand.

Electrical engineering technology is concerned with the generation, transmission, and distribution of electrical

power; its application to power and control industrial processes and wiring systems design. The mechanical coursework focuses on materials, stress, strain, heat, friction, and vibration.

A graduate of this program will earn an associate of applied science in electrical engineering technology.

### SUGGESTED COURSE SEQUENCE

|                     |   | <b>Credit<br/>Hours</b> |
|---------------------|---|-------------------------|
| <b>Semester I</b>   |   |                         |
| ECA122              | Computer Applications for Technical Professionals | 3                       |
| EET120              | DC Circuit Analysis                               | 4                       |
| ETD121              | Engineering Technology Seminar                    | 1                       |
| ENG124              | College Composition †                             | 3                       |
| MTH121              | College Algebra and Trigonometry I                | 4                       |
| PHY121              | Physics I   | 4                       |
|                     |   | 19                      |
| <b>Semester II</b>  |   |                         |
| EET122              | AC Circuit Analysis                               | 4                       |
| EET123              | Electronic Devices and Circuits                   | 4                       |
| EET126              | Electrical Machines                               | 4                       |
| ECA222              | Introduction to C++ Programming                   | 3                       |
| MTH122              | College Algebra and Trigonometry II               | 3                       |
|                     |   | 18                      |
| <b>Semester III</b> |   |                         |
| DET125              | Basic AutoCad                                     | 3                       |
| MET123              | Material Science                                  | 2                       |
| MET124              | Statics and Strengths of Materials                | 4                       |
| EET227              | PLCs and Industrial Controls I                    | 3                       |
| MTH221              | Concepts of Calculus                              | 3                       |
| ENG221              | Technical Report Writing                          | 3                       |
|                     |   | 18                      |
| <b>Semester IV</b>  |   |                         |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3                       |
| MET222              | Fluid Power                                       | 4                       |
| MET225              | Manufacturing Processes                           | 3                       |
| MET227              | Thermodynamics and Heat Transfer                  | 3                       |
| EET129              | Optics  | 2                       |
|                     | Arts/Humanities/Social Sciences Elective*         | 3                       |
|                     |   | 18                      |

### 73 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121.

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Electrical Maintenance Technology

This degree program provides an understanding of the installation, operation, maintenance and repair of various electrical systems in electrical and electronic equipment. Electrical maintenance concentrates on the industrial environment and prepares students to maintain and repair electrical/electronic equipment used in government, commercial and industrial facilities.

Graduates can look forward to jobs as electronic service technicians, electrical service technicians, field service technicians, electricians, electrical maintainers and electronic or electrical equipment installers.

The curriculum includes electrical and electronic analysis and fundamentals, digital electronics, electrical and electronic trouble-shooting, digital communications, transformers, National Electric Code, electrical machines, industrial controls, programmable controllers, hydraulics, pneumatics and heating, ventilation and air conditioning. This knowledge is essential for graduates who are required to maintain and repair modern electrical/electronic equipment.

A graduate of this program will earn an associate of applied science degree in electrical maintenance technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| EET120              | DC Circuit Analysis                               | 4               |
| ETD121              | Engineering Technology Seminar                    | 1               |
| MST134              | Hydraulic and Pneumatic Systems                   | 6               |
| PHY121              | Physics I   | 4               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
|                     |   | 19              |
| <b>Semester II</b>  |   |                 |
| EET125              | Circuit Manufacturing Techniques                  | 1               |
| MST121              | Blueprint Reading                                 | 2               |
| EET123              | Electronic Devices and Circuits                   | 4               |
| EET126              | Electrical Machines                               | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| EET122              | AC Circuit Analysis                               | 4               |
|                     |   | 18              |
| <b>Semester III</b> |   |                 |
| EET128              | NEC and Electrical Systems Design                 | 2               |
| EET227              | PLCs and Industrial Controls I                    | 3               |
| MST221              | Mechanical Drive Components                       | 3               |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| EST129              | Switchgear, Transformers and Controls             | 2               |
| ENG124              | College Composition †                             | 3               |
|                     |   | 16              |
| <b>Semester IV</b>  |   |                 |
| EET228              | PLCs and Industrial Controls II                   | 3               |
| EST221              | Electrical/Electronic Troubleshooting             | 3               |
| ENG221              | Technical Report Writing                          | 3               |
| HVC121              | HVAC Principles I                                 | 3               |
|                     | Technical Elective**                              | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     |   | 18              |

## 71 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121.

\*\* Select from EET232 or EET244.



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Electronic Engineering Technology

Space vehicles, C.A.T. scans, personal computers, electronically controlled machines, computerized automobile functions and global communication are just a few achievements of modern industry.

Well-educated and well-trained technical personnel are needed for research, development, production, testing, installation, maintenance and repair of electronic equipment, machinery and products.

Electronic engineering technicians must have theoretical knowledge of the field and extensive “hands-on” experience in laboratory techniques and equipment. Stark State combines theoretical classroom education with “hands-on” laboratory experience to ensure excellent technical knowledge and skills.

Job opportunities available to electronic engineering technicians include: audio technician, biomedical, industrial network, customer service technician, process control technician, field engineering specialist and electronic technician.

**The electronic engineering technology program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).**

A graduate of this program will earn an associate of applied science degree in electronic engineering technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ECA122              | Computer Applications for Technical Professionals | 3               |
| EET120              | DC Circuit Analysis                               | 4               |
| ETD121              | Engineering Technology Seminar                    | 1               |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
|                     |   | 19              |
| <b>Semester II</b>  |   |                 |
| DET125              | Basic AutoCAD                                     | 3               |
| EET122              | AC Circuit Analysis                               | 4               |
| EET123              | Electronic Devices and Circuits                   | 4               |
| EET125              | Circuit Manufacturing Techniques                  | 1               |
| ECA128              | Visual Basic Programming                          | 3               |
| MTH122              | College Algebra and Trigonometry II               | 3               |
|                     |   | 18              |
| <b>Semester III</b> |   |                 |
| EET262              | Pulse and Digital Integrated Circuits             | 4               |
| EET129              | Optics  | 2               |
| EET230              | Electronic Circuits I                             | 3               |
| EET248              | Workstation Interfacing                           | 3               |
| MTH221              | Concepts of Calculus                              | 3               |
| ENG 221             | Technical Reporting Writing                       | 3               |
|                     |   | 18              |
| <b>Semester IV</b>  |   |                 |
| EET225              | Digital Communications and Systems Analysis       | 3               |
| EET231              | Electronic Circuits II                            | 3               |
| EET232              | Industrial Electronics                            | 3               |
| EET235              | Technical Project – Electronic                    | 1               |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     |   | 16              |

## 71 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121.



*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Environmental, Health and Safety Technology

The associate of applied science degree in environmental, health and safety (EH&S) technology prepares students to apply their skills in science, engineering, communication and economics to issues affecting the environment. This includes such issues as the quality of air, water and land. Other areas include workplace safety, environmental regulation and compliance and various environmental systems.

Environmental career fields include data collection, instrumentation, regulation, health and safety, natural resources, waste minimization and pollution prevention. Additionally, the EH&S technician is in demand with a vast array of manufacturing firms.

The program has been developed with ongoing input from an advisory committee of industry experts to ensure the curriculum includes the knowledge and skills needed in business and industry. Graduates of Stark State's EH&S technology program will be uniquely qualified to meet the needs of both the private and public sectors as they face growing EH&S regulation and concern.

A graduate of this program will receive an associate of applied science degree in EH&S technology.

## SUGGESTED COURSE SEQUENCE

|                     |  | Credit<br>Hours |
|---------------------|--|-----------------|
| <b>Semester I</b>   |  |                 |
| MTH121              | College Algebra and Trigonometry I                             | 4               |
| ENG124              | College Composition †  | 3               |
| BIO126              | Science, Energy and the Environment                            | 4               |
| ETD121              | Engineering Technology Seminar                                 | 1               |
| CHM121/CHM141       | General Chemistry or General Chemistry I                       | 4/5             |
|                     | Arts/Humanities/Social Sciences Elective*                      | 3               |
|                     |  | <u>19/20</u>    |
| <b>Semester II</b>  |  |                 |
| CHM122/CHM142       | Organic and Biological Chemistry or<br>General Chemistry II    | 4/5             |
| MTH222              | Statistics   | 3               |
| ECA122              | Computer Applications for Technical Professionals              | 3               |
| ENV121              | Regulations and Compliance                                     | 3               |
| ENV221              | OSHA - 40-hour HAZWOPER  | 2               |
|                     |  | <u>15/16</u>    |
| <b>Semester III</b> |  |                 |
| ENV222              | Industrial Processes and Pollution                             | 3               |
| ENV223              | Basic Geology / Hydrology                                      | 3               |
| ENV224              | Air Sampling, Analysis, and Control                            | 3               |
| COM121 / COM123     | Effective Speaking or Inter-group Communications               | 3               |
|                     | Arts/Humanities/Social Sciences Elective*                      | 3               |
|                     |  | <u>15</u>       |
| <b>Semester IV</b>  |  |                 |
| ENV236              | Environmental, Health and Safety Special Projects              | 3               |
| ENG221              | Technical Report Writing                                       | 3               |
| ENV225              | Solid and Hazardous Waste Sampling,<br>Analysis and Management | 3               |
| ENV226              | Water Sampling, Analysis, and Control                          | 3               |
| ENV228              | Health and Safety  | 3               |
| ENV230              | OSHA 8-hour Refresher**  | 1               |
|                     |  | <u>16</u>       |

## 65/67 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121

\*\* ENV 230 may be taken by students who wish to complete annual refreshers of their 40-hour HAZWOPER training.

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Heating, Ventilating, and Air Conditioning Technology

Today's heating, ventilation, air conditioning and refrigeration (HVAC/R) industry makes possible modern living including medicine, technology, and personal comfort at home and on the job, as well as food preservation. In fact, it supports almost every component of our way of life. The HVAC industry is growing and becoming more technologically complex. As a result, industry leaders have mandated that employees have a variety of skills including technical problem solving, communications, and customer relations. The new HVAC employee must be a professional in every way and has great potential for advancement. Areas of opportunity include factory or distributor technical representative; factory, distributor or dealer sales professional; system design technician; distributor or dealer customer service manager; project estimator; project manager; dealer field service technician and more.

Stark State College offers a commercial/industrial lab as well as a residential lab totaling approximately 4000 square feet.

Both labs have a wide variety of modern HVAC and refrigeration equipment due to the many area HVAC and refrigeration businesses that support the program with state-of-the-art equipment. The HVAC program also has a 750-square-foot full sheet metal lab.

Students have the opportunity to obtain a variety of HVAC/R certifications in the program including ARI ICE (industry competency exams) tests, EPA refrigerant certification, and NATE (North American Technician Excellence) exams. Four NATE-approved courses are also offered for those seeking re-certification.

A graduate of this program will earn an associate of applied science degree in heating, ventilating and air conditioning technology.

## SUGGESTED COURSE SEQUENCE

|                     |   | <b>Credit<br/>Hours</b> |
|---------------------|---|-------------------------|
| <b>Semester I</b>   |   |                         |
| ENG124              | College Composition †                               | 3                       |
| MTH101              | Introduction to Algebra                             | 4                       |
| HVC121              | HVAC Principles I                                   | 3                       |
| CET121              | Building Materials and Construction                 | 3                       |
| ECA122              | Computer Applications for Technical Professionals   | 3                       |
|                     | Arts/Humanities/Social Sciences Elective*           | 3                       |
|                     |   | 19                      |
| <b>Semester II</b>  |   |                         |
| HVC122              | HVAC Principles II                                  | 3                       |
| HVC123              | Sheet Metal Layout I                                | 3                       |
| HVC227              | HVAC Field Installation Techniques/Procedures       | 4                       |
| HVC234              | HVAC Electrical Systems and Applications            | 3                       |
| PHY101              | Principles of Physics                               | 4                       |
|                     |   | 17                      |
| <b>Semester III</b> |   |                         |
| MST121              | Blueprint Reading                                   | 2                       |
| MST126              | Pipefitting Principles and Applications             | 4                       |
| HVC222              | HVAC Design and Application                         | 3                       |
| HVC223              | HVAC System Operation and Troubleshooting - Heating | 3                       |
| COM121/COM123       | Effective Speaking or Inter-group Communications    | 3                       |
|                     | Arts/Humanities/Social Sciences Elective*           | 3                       |
|                     |   | 18                      |
| <b>Semester IV</b>  |   |                         |
| HVC224              | HVAC System Operation and Troubleshooting - Cooling | 3                       |
| HVC226              | Sheet Metal Layout II                               | 3                       |
| HVC232              | Advanced HVAC Applications and Controls             | 3                       |
| HVC235              | Refrigeration                                       | 3                       |
| HVC236              | Advanced HVAC Electrical Applications               | 3                       |
| ENG221              | Technical Report Writing                            | 3                       |
|                     |   | 18                      |

## 72 TOTAL CREDIT HOURS

Following graduation from Stark State's HVAC program, students may study at Ferris State's (2+2) online program and receive a bachelor of science in HVAC technology.

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121



A COLLEGE TECH PREP PARTICIPANT

*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Heating, Ventilating, and Air Conditioning Technology

## One-Year HVAC Certificate Program

This is a one-year state-accredited technical certificate in HVAC Technology. It provides the students with many of the core technical courses in heating ventilation and air conditioning (HVAC) technology. This program is approximately one-half the requirements for the associate of applied science in HVAC technology. Many students who earn this one-year technical certificate continue in the program to get an associate degree in HVAC technology.

Students also have the opportunity to take the EPA certification test.

### SUGGESTED COURSE SEQUENCE

|                     |   | Credit Hours |
|---------------------|---|--------------|
| <b>Semester I</b>   |   |              |
| HVC121              | HVAC Principles I                                   | 3            |
| HVC123              | Sheet Metal Layout I                                | 3            |
| ECA122              | Computer Applications for Technical Professionals   | 3            |
| MTH101              | Introduction to Algebra                             | 4            |
|                     |   | <hr/>        |
|                     |   | 13           |
| <b>Semester II</b>  |   |              |
| HVC223              | HVAC System Operation and Troubleshooting – Heating | 3            |
| HVC234              | HVAC Electrical Systems and Applications            | 3            |
| HVC122              | HVAC Principles II                                  | 3            |
| HVC227              | Field Installation Techniques and Procedures        | 4            |
|                     |   | <hr/>        |
|                     |   | 13           |
| <b>Semester III</b> |   |              |
| HVC224              | HVAC System Operation and Troubleshooting – Cooling | 3            |
| CET121              | Building Materials and Construction                 | 3            |
|                     |   | <hr/>        |
|                     |   | 6            |

**32 TOTAL CREDIT HOURS**

*A graduate of this program will earn a state-accredited certification.*



*In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.*

*In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.*

# Mechanical Engineering Technology

The purpose of the mechanical engineering technology program is to provide education for the application of scientific and engineering principles in the support of mechanical engineering activities. This associate degree technician program is similar to a bachelor degree, but the associate program places more emphasis on practical application and experience.

As a mechanical engineering technician, students may work in many areas. In design and development, they would prepare sketches, drawings and layouts, and analyze proposed equipment components. Analysis of cost and practical value of design must be incorporated. Therefore, technicians must understand the mechanical principles involving design, tolerance, stress, strain, friction and vibration.

Technicians may become involved in testing equipment and materials for recommending design changes, improving performance or eliminating production problems. Therefore, technicians must be able to conduct projects, record and represent data, analyze results and prepare formal reports.

The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).

## Fuel Cell Technology Track

The mechanical engineering technology/fuel cell technology track incorporates mechanical, electrical and chemical technologies to provide education for the application of scientific and engineering principles focused on alternative energy sources and more specifically, fuel cell technology. Students pursuing the fuel cell technology track should substitute the following courses in the mechanical engineering technology degree:

|        |   |
|--------|---|
| MET229 | Introduction to Alternative Energy and Fuel Cells ( <i>replaces MET223</i> )  |
| MET230 | Analysis and Applications of Types of Fuel Cells ( <i>replaces MET228</i> )   |
| MET231 | Fuel Cell Systems ( <i>replaces MET221</i> )                                  |
| MET232 | Fuel Cell Project ( <i>replaces MET226</i> )                                  |
| CHM121 | General Chemistry or CHM141<br>General Chemistry I ( <i>replaces PHY122</i> ) |

## SUGGESTED COURSE SEQUENCE

|                     |   | Credit<br>Hours |
|---------------------|---|-----------------|
| <b>Semester I</b>   |   |                 |
| ETD121              | Engineering Technology Seminar                    | 1               |
| MET123              | Material Science                                  | 2               |
| DET121              | Engineering Drawing                               | 3               |
| ENG124              | College Composition †                             | 3               |
| MTH121              | College Algebra and Trigonometry I                | 4               |
| PHY121              | Physics I   | 4               |
|                     |   | 17              |
| <b>Semester II</b>  |   |                 |
| MET124              | Statics and Strength of Materials                 | 4               |
| MET225/AIT122       | Manufacturing Processes or Machine Tools          | 3               |
| MTH122              | College Algebra and Trigonometry II               | 3               |
| PHY122              | Physics II  | 4               |
| ECA122              | Computer Applications for Technical Professionals | 3               |
|                     |   | 17              |
| <b>Semester III</b> |   |                 |
| COM121/COM123       | Effective Speaking or Inter-group Communications  | 3               |
| MET228              | Machine Design                                    | 4               |
| MET221              | Advanced Strength of Materials                    | 2               |
| MET222              | Fluid Power                                       | 4               |
| DET125/DET131       | Basic AutoCAD or ProEngineer                      | 3               |
| MTH221/MTH223       | Concepts of Calculus or Analytical Geometry       | 3/4             |
|                     |   | 19/20           |
| <b>Semester IV</b>  |   |                 |
| MET223              | Dynamics  | 2               |
| EST130              | Electrical Circuits and Devices                   | 4               |
| MET227              | Thermodynamics and Heat Transfer                  | 3               |
| MET226              | Technical Project – Mechanical                    | 2               |
| ENG221              | Technical Report Writing                          | 3               |
|                     | Arts/Humanities/Social Sciences Elective*         | 3               |
|                     |   | 17              |

### 70/71 TOTAL CREDIT HOURS

† Based on SSCT placement score.

\* Arts/Humanities/Social Sciences Electives: PSY121, PSY122, PSY123, PSY124, PSY221, PHL122, SOC121, SOC122, SOC123, SOC225, BUS122, BUS221, BUS222, PSC121



A COLLEGE TECH PREP PARTICIPANT

In an effort to meet the needs of students, courses required in each of the programs are scheduled in sequence to accommodate those attending on a full-time or part-time basis. All students should consult their academic advisors to plan their schedules and course sequence appropriately.

In order to keep pace with progress, the College reserves the right to change fees, academic programs, course descriptions, or any other statements, contained in this catalog at the discretion of the College or its Board of Trustees. Please refer to [www.starkstate.edu](http://www.starkstate.edu) for the most current information.