

2017-2018

# academic catalog



**THADDEUS STEVENS**  
COLLEGE *of* TECHNOLOGY





# a letter from the president



Thaddeus Stevens College of Technology has been changing the lives of students for over 100 years. Stevens provides a well-rounded, two-year education that virtually guarantees a good job and the opportunity for a better life. While most students select one of several job offers upon graduation, some choose to further their education. Accredited by the Middle States Association, Stevens College offers Associate Degrees and one-year certificates in range of technical majors.

Stevens is unique in many ways. Few two-year colleges have on-campus housing or offer a full range of intercollegiate athletics. We also offer full scholarships to over one-half of our students based upon their financial need.

One of Stevens' many strengths is its diversity: ethnically, racially, socio-economically, and academically. Males and females of all ages attend Stevens. This diversity, ever reflective of society's work place, is a valuable component of our students' education.

Stevens College consists of 20 buildings located on a beautiful and historic 32.5-acre tree-lined campus and 2 auxiliary campuses with the opening of its new Greenfield site. The new Learning Resource Center, which includes the library, is a state-of-the-art facility with computer learning stations and full Internet access. The College's Branch Campus is located five blocks from the main campus and includes dormitory rooms and program classrooms and laboratories. All of the facilities are well-maintained with contemporary equipment and technology.

Stevens' strength goes well beyond its grounds, buildings, and technology. Its strength lies in its highly qualified and dedicated faculty and support staff. These people, with their real-world experience, genuine concern for students, and hands-on approach to education, are what make Stevens different from any other institution. They're responsible for the high success rate of our students.

Are you interested in a total college experience that results in immediate employment and a bright career? Then I encourage you to visit our web site at [www.stevenscollege.edu](http://www.stevenscollege.edu) to look at the many programs we offer, our college videos, and online application. Contact our admissions office for more information at 1-800-842-3832.

A handwritten signature in black ink, appearing to read "William E. Griscom".

Dr. William E. Griscom, President

## **Mission Statement**

Thaddeus Stevens College of Technology educates Pennsylvania's economically and socially disadvantaged as well as other qualified students for skilled employment in a diverse, ever-changing workforce and for full effective participation as citizens.

## **Vision Statement**

Thaddeus Stevens College of Technology will be the best two-year technical college of its kind by adding value to the lives of our students so that they will find skilled employment, be effective citizens, and reach their full potential.

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# the legacy of thaddeus stevens

Thaddeus Stevens was born in Danville, Vermont, on April 4, 1792. He was the second of four boys whose parents were Sarah and Joshua Stevens. Thaddeus' older brother, Joshua, was born with two clubfeet that made it very difficult for him to walk. In the late 1700s, any physical deformity was seen as a sign from God that the family had committed some



serious sin. Such a deformity was called the mark of the devil, and as a consequence, the family was ridiculed and shunned. The family's status worsened when Thaddeus was also born with a clubfoot.

Thaddeus' father, Joshua Stevens, was an alcoholic and an abusive man with a special talent for staying poor. The family lived in abject poverty on a small farm. By the time Thaddeus was 12, his father had abandoned the family and was later killed in the War of 1812.

Sarah Stevens was a kind woman with great energy, a strong will, and a devout faith in God. She held the family together by working day and night. In addition to the farm work, she cleaned and performed other domestic chores for her neighbors. Thaddeus loved his mother and was devoted to her throughout his life.

Sarah realized that the best hope for her eldest sons was education. She scraped together enough money to enroll them in the nearby one-room Peacham School. Thaddeus was frail, poor, disabled, and not particularly attractive. Consequently, he was teased mercilessly by other children throughout his childhood.

Extremely sensitive, he became very shy; however, he excelled in school. It became obvious that he possessed a great intellect and had a special aptitude for debating. Upon completion of his education at Peacham, Thaddeus was accepted at Dartmouth College. He was the poorest student at the College, never having enough money for books let alone money to socialize with his rich classmates. As a result, he was an outcast, just as he had been throughout his childhood. Even though he was more qualified than most of his peers, he was not nominated for Phi Beta Kappa, an honors fraternity. This insult left him hurt and bitter.

Thaddeus Stevens graduated from Dartmouth and accepted a teaching position at a one-room school in York, Pennsylvania. He studied law in the evenings and passed the bar exam in a year. He set up practice in Gettysburg and later moved to Lancaster. He became an instant success. In his first year, he successfully argued nine out of ten cases before the Pennsylvania Supreme Court, an unprecedented feat. Word of his ability and success spread throughout the region, and he was inundated with clients. After five years, he owned a house and lot, several other properties, and was able to purchase for his mother a 250-acre farm with 14 cows. He said that buying her the farm was the "greatest satisfaction of his life." During the next 21 years, he would become very wealthy and became known as an excellent attorney, renegade politician, and philanthropist.

In 1833, Thaddeus Stevens was elected to the Pennsylvania House of Representatives. He did not run as a Democrat, the party that dominated Pennsylvania politics, but rather as an Anti-Mason. This was a political party that opposed Freemasons or Masonry.

Freemasons were an organization that included many of the most influential and prestigious men of the time, including



George Washington. Anti-Masons opposed it because of its secrecy, oaths, and religious pageantry. Stevens objected to Masonry because of his personal hatred of exclusionary clubs and societies and because some chapters' charters excluded "cripples."

During his time in the General Assembly, the accomplishment Thaddeus Stevens was most proud of was his effort to institute free public education. In 1830's America, there were practically no free public schools. Those that existed were found in New England and in large cities. Only affluent families could afford to send their children to school. In a few places, poor children could attend school if their parents would publicly admit poverty; however, this was very rare.

When a Free School Bill was introduced in the Pennsylvania House of Representatives, Stevens became an ardent supporter. He collaborated with Governor Wolfe to get the bill passed, even though Wolfe was a Mason. However, when the legislators returned to their districts there was an uproar. Some people believed that free public education was too expensive while others opposed the bill because they had their own religious schools. Over 32,000 individuals signed a petition to repeal the new legislation. The General Assembly was recalled and went into session to reconsider. The Senate quickly passed a repeal bill. The bill then went to the House. Stevens took the floor to defend the original bill. There was standing room only as most of the Senate filled the gallery. Stevens began his speech by using statistics to show how a state system of free schools was more efficient and ultimately less costly than the existing system. He said the repeal act should be called: "An act for branding and marking the poor, so that they may be known from the rich and the proud." He went on:

"I know how large a portion of the community can scarcely feel any sympathy with, or understand the necessities of the poor; the rich appreciate the exquisite feelings which they enjoy, when they see their children receiving the boon of education, and rising in intellectual superiority above the clogs which hereditary poverty had cast upon them.... When I reflect how apt hereditary wealth, hereditary influence, and perhaps as a consequence, hereditary pride, are to close the avenues and steel the heart against the wants and rights of the poor, I am induced to thank my Creator for having, from early life, bestowed upon me the blessing of poverty."

He urged the legislators to ignore the misguided petitions and to lead their people as philosophers, with courage and benevolence.

After he finished he limped back to his seat to the cheers of the entire assembly. The House suspended the rules and amended the Repeal Bill into an act that actually strengthened the original Free School Act and passed it. The Senate immediately followed suit. The result was to give Pennsylvania a statewide, free public school system an entire generation before New York, New Jersey, Connecticut, Rhode Island, and the entire South. This is why Stevens is referred to as the savior of free public education in Pennsylvania, and why the Commonwealth created Thaddeus Stevens College of Technology as a tribute to Thaddeus Stevens.

The free public school system is another example of Stevens drawing from his own background and experience and attacking privilege based on anything other than merit. Also, it reflects his fundamental belief that education is the great equalizer. He later said that if education is inexpensive and honorable, people with intelligence—no matter how poor—would utilize it to improve themselves.

An important part of Thaddeus Stevens' legacy is his philanthropy. Throughout his life, he could never recall the poverty and discrimination of his childhood without great pain. Its effect was to sensitize him to the oppression and human suffering in the world. He simply could not bear to hear or see suffering if his money or legal aid could relieve it. He gave of them both almost without limit. He did this irrespective of race, religion, national origin, or political affiliation. Even his harshest critics said he was charitable, kind, and lavish with his money in the relief of poverty. He had standing orders with his physician and cobbler to treat all deformed and disabled children at his expense. It is impossible to estimate how much money he gave to the poor and needy or the value of the legal services he provided for free. One indicator was that at the time of his death, he had over \$100,000 in notes from individuals to whom he had loaned money, money which had never been repaid. In his will, he left \$50,000 to establish a school for the relief and refuge of homeless, indigent orphans. This original bequest has evolved into Thaddeus Stevens College of Technology.

His will states:

"They shall be carefully educated in the various branches of English education and all industrial trades and pursuits. No preference shall be shown on account of race or color in their admission or treatment. Neither poor Germans, Irish, or Mahometan, nor any others on account their race or religion of their parents, shall be excluded. They shall be fed at the same table."

He defended and supported Indians, Seventh-day Adventists,



Mormons, Jews, Chinese, and women. However, the defense of runaway or fugitive slaves gradually began to consume the greatest amount of his time, until the abolition of slavery became his primary political and personal focus. He was actively involved in the Underground Railroad, assisting runaway slaves to get to Canada, as many as 16 a week.

Thaddeus Stevens was elected to the United States House of Representatives from 1849–1853 and from 1859 until his death in 1868. This was the period leading up to and including the Civil War and the beginning of Reconstruction.

During this time, Stevens became the most powerful congressman in Washington. He chaired the House Ways and Means Committee and later the Appropriations Committee. He was responsible for funding the war effort and later Reconstruction. His goals during this period were the following: (1) the abolition of slavery; (2) full legal rights regardless of race; (3) voting rights regardless of race; (4) and the result of Reconstruction to be the empowerment of African Americans by redistributing power and wealth in the South.

Stevens' legislative legacy is the 13th, 14th, and 15th Amendments to the Constitution, which serve as the basis for all civil rights legislation. Stevens drafted his own version of the 13th Amendment, but when it failed to gain support, he shepherded a more popular version through Congress. It ended slavery in all states, whereas the Emancipation Proclamation only abolished slavery in the Confederacy.

Stevens also guided the 14th Amendment through Congress. This Amendment established a national citizenry with all citizens given equality before the law, which no state could alter. He was disappointed because the Amendment still made references to males only, allowed states to restrict voting rights based on race, and allowed Confederates to vote.

Stevens' disappointment in the shortcomings of the 14th Amendment paled in comparison to his outrage over the failure of Reconstruction at the end of the Civil War. He wanted the wealthy white political power structure of the South to be dismantled and redistributed. He proposed that every black free man should receive 40 acres and a mule and

that Confederates should not be allowed to vote immediately. Unfortunately, any chance of Stevens' vision becoming a reality was lost when Lincoln was assassinated and Andrew Johnson, the vice president, became president.

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Johnson's views about the nature of Reconstruction are reflected in this quote from his annual address to Congress in 1867: Blacks possess less "capacity for government than any other race of people. No independent government of any form has ever been successful in their hands. On the contrary, wherever they have been left to their own devices, they have shown a constant tendency to relapse into barbarism."

Stevens hated Johnson and worked to have him impeached. While the final vote fell one vote short in the Senate, Johnson was permanently weakened and reduced to a figurehead for the remainder of his term, being replaced by Ulysses Grant in 1868.

Stevens did not live to see the passage of the 15th Amendment; however, most would agree at the very least he inspired it. It guaranteed all male citizens the right to vote.

Thaddeus Stevens died at midnight on August 11th, 1868. The public expression of grief in Washington was second only to Lincoln's. His coffin lay in State at the Capitol Rotunda, flanked by a Black Union Honor Guard from Massachusetts. Twenty thousand people, one-half of whom were black free men, attended his funeral in Lancaster. He chose to be buried in the Shriner-Concord Cemetery because it was the only cemetery that would accept all races. He wrote the inscription on his headstone that reads:

"I repose in this quiet and secluded spot, not from any natural preference for solitude, but finding other cemeteries limited as to race, by charter rules, I have chosen this that I might illustrate in my death the principles which I advocated through a long life, equality of man before his Creator."



# quick facts

## Location

Thaddeus Stevens College is located in southeastern Pennsylvania in Lancaster, about 71 miles west of Philadelphia and 38 miles east of Harrisburg. The campus is a few blocks from downtown Lancaster. The greater Lancaster area includes over 450,000 inhabitants and offers many athletic, cultural, and social activities.

## Ownership

Thaddeus Stevens College of Technology is owned by the Commonwealth of Pennsylvania.

## Instructional Facilities

The 20 buildings comprising the Thaddeus Stevens College campus are situated on a 32.5 acre tract of land located at the eastern edge of the city of Lancaster. These include five residence halls, a pair of branch campuses, a dining hall, a lab/classroom building with computer and learning labs, and new and expanded technical laboratory facilities. The Learning Resources Center was completed in the summer of 1995. In addition, the Multipurpose Activity Center—with 3 NCAA-sized basketball courts, large fitness center, racquetball courts, an indoor track, and an athletic field with an outdoor track—and the Student Center are available for student use.

## Cost

The tuition and room/board costs are provided in the Admissions section of this catalog. Many students receive full grants based on financial need.

## Student Population

Co-ed, 1000-1100 students.

## Calendar

Each scholastic year classes begin in late August and end in early May; semesters consist of 16 weeks of instruction. Summer sessions are held from May through August for pre-major and general education courses.

## Placement Rate

Over 97%, with 100% in some programs.

## Job Placement Assistance

Available free of charge to all students. Includes assistance in obtaining part-time jobs on and off campus, full-time summer employment, and full-time employment upon graduation.

## Housing

Five residence halls including dormitory space in the Branch Campus. Off-campus housing is usually available near the College. The Residence Life Office has further information on housing.

## Food

Meals are served in Jones Dining Hall during the fall and spring semesters according to the following schedule:

### Monday through Friday

Continental breakfast:	6:45–7:00 am
Hot breakfast:	7:00–7:30 am
Coffee break	9:00–9:30 am
Lunch:	10:45 am–1:00 pm
Coffee break	2:00–2:30 pm
Dinner	5:00–6:30 pm

### Weekends and Holidays

Brunch	10:30 am–12:00 pm
Dinner	4:30–5:00 pm

Vending machines are also placed around the campus.

## Bulldog Café I and Bulldog Café II

Students always have the opportunity of enjoying a meal, to include breakfast, or just a quick snack from one of two Bulldog Cafés. Bulldog Café I is located on the first floor of the Schwalm Student Center. Bulldog Café II is located adjacent to the Main Lobby at the Branch Campus.

## Student Organizations

Student Congress, residence hall councils, student representatives on all College standing committees, American Design Drafting Association, American Institute of Architectural Students, Black Student Union, Boxing Club, Building Industry Association, Latino Scholars Alliance, Outdoors Club, Phi Theta Kappa, Powerlifting, Power Source, Society of Manufacturing Engineers, Tech Phi Tech, SkillsUSA, and Women in Tech and Trades.

## Athletics

Intercollegiate basketball, football, cross country, track and field, and wrestling. The College also has intramural programs.

## The Dean's List

The Dean's List is an honor roll of all students enrolled in 12 credit-bearing courses who have a semester GPA of 3.25 or better. The list is compiled at the end of each semester.

## Advisory Committees

Thaddeus Stevens College relies on the services of 21 technical program advisory committees. The committees meet periodically with the administration and staff to consult about program standards, curriculum content, instructional methods, placement, and equipment selection.

# the purpose, philosophy, and programs of thaddeus stevens

## The Purpose of Thaddeus Stevens College

Thaddeus Stevens College of Technology seeks to fulfill its mission and philosophy by providing the following:

- Technical programs that integrate theory and hands-on training to prepare students for skilled employment or transfer to other colleges.
- General education courses that integrate communications, math, science, technology, humanities, interpersonal skills, reasoning, and physical health.
- Pre-Major program and services to assist students in meeting the requirements to enter and succeed in their college-level coursework.
- Enriched curriculum opportunities through internships, community projects, service-learning, and partnerships with business and industry.
- A dedicated faculty and staff who are committed to student success.
- Technology and information resources necessary for students to achieve their educational and career goals.
- Opportunities that contribute to the educational, career, social, cultural, recreational, and personal development of each student.
- A campus environment that fosters self-development, citizenship, and democratic ideals.
- Needs-based grants to qualified students.

## The Philosophy of Thaddeus Stevens College

Thaddeus Stevens College of Technology is dedicated to the principles of its benefactor, Thaddeus Stevens, who believed in the dignity, civil rights, and value of each human being regardless of race, sex, religion, or heritage. We believe in the worth and potential of each student and the importance of each in a democratic society.

## The Core Values of Thaddeus Stevens College

Thaddeus Stevens College of Technology is committed to structuring and maintaining its daily functions around the following core values: Integrity, diversity, respect, teamwork, learning and growth, and accountability.

**Integrity:** We value the commitment to high moral/ ethical standards, honesty, and fairness in teaching and learning, social engagements, and professional practices.

**Diversity:** We value the recognition of the variety of unique individuals within our world and the interdependence upon each other, each other's culture, and the natural environment. We value the differences and respect the qualities and experiences that are different from our own.

**Respect:** We value the unbiased consideration, treatment, and regard for the rights, values, beliefs, and property of all other people.

**Teamwork (Collaboration):** We value working cooperatively and collaboratively as part of a group in which there is a shared mission and vision aligned toward a goal.

**Learning and Growth (Life-Long Learning):** We value the relentless dedication to increasing the knowledge and competencies of all individuals associated with the College. We recognize that human resources are the College's only sustainable competitive advantage.

**Accountability:** We value the taking of responsibility for actions and the results of those actions; honoring obligations, expectations, and requirements; delivering what is promised; and owning up to shortcomings and mistakes.

## Institutional Learning Goals

The Thaddeus Stevens College community stimulates and measures student achievement through internal and external evidence-based metrics aligned to and with our institutional learning goals: Mastery of content, effective communication, mathematical reasoning, critical thinking, and leadership.

**Mastery of Content:** Students will exhibit career readiness by demonstrating the critical knowledge and skills required in professional and/or collegiate endeavors.

**Effective communication:** Students will read, write, speak, and listen to achieve literal and/or inferential understanding.

**Mathematical reasoning:** Students will apply mathematical methods and concepts to solve problems and make informed decisions.

**Critical Thinking:** Students will build upon acquired comprehension by employing higher order thinking skills when questioning current situations, posing an alternative, objectively resolving problems, and/ or applying prior knowledge and processes to new situations.

**Civic Engagement:** Students will develop an appreciation for the value of community through service opportunities.

**Technological Competency:** Students will demonstrate technical knowledge and practical application.

### Accountability

Middle States Commission on Higher Education Accreditation: Thaddeus Stevens College of Technology has received and maintained its accreditation through the Middle States Commission on Higher Education (MSCHE or Middle States) since 1991. The Middle States Commission on Higher Education is a voluntary, nongovernmental, membership association that defines, maintains, and promotes educational excellence across institutions with diverse missions, student populations, and resources. Additional information can be found in the publication, Characteristics of Excellence in Higher Education (<http://www.msche.org/>).

### Programs

Two-year technical programs in the following areas lead to an associate degree:

- Architectural Technology
- Automotive Technology
- Business Administration
- Cabinetmaking and Wood Technology
- Carpentry Technology
- Collision Repair Technology
- Computer and Network Systems Administration
- Computer Software Engineering Technology
- Electrical Technology
- Electronic Engineering Technology
- Electro-Mechanical Technology
- Engineering CAD Technology
- Graphic Communications and Printing Technology
- Heating, Ventilation, Air Conditioning and Refrigeration
- Machine Tool and Computer-Aided Manufacturing
- Masonry Construction Technology
- Metals Fabrication and Welding Technology
- Plumbing Technology
- Residential Remodeling
- Water and Environmental Technology
- Welding Technology

Nine-month technical programs in the following areas lead to a certificate:

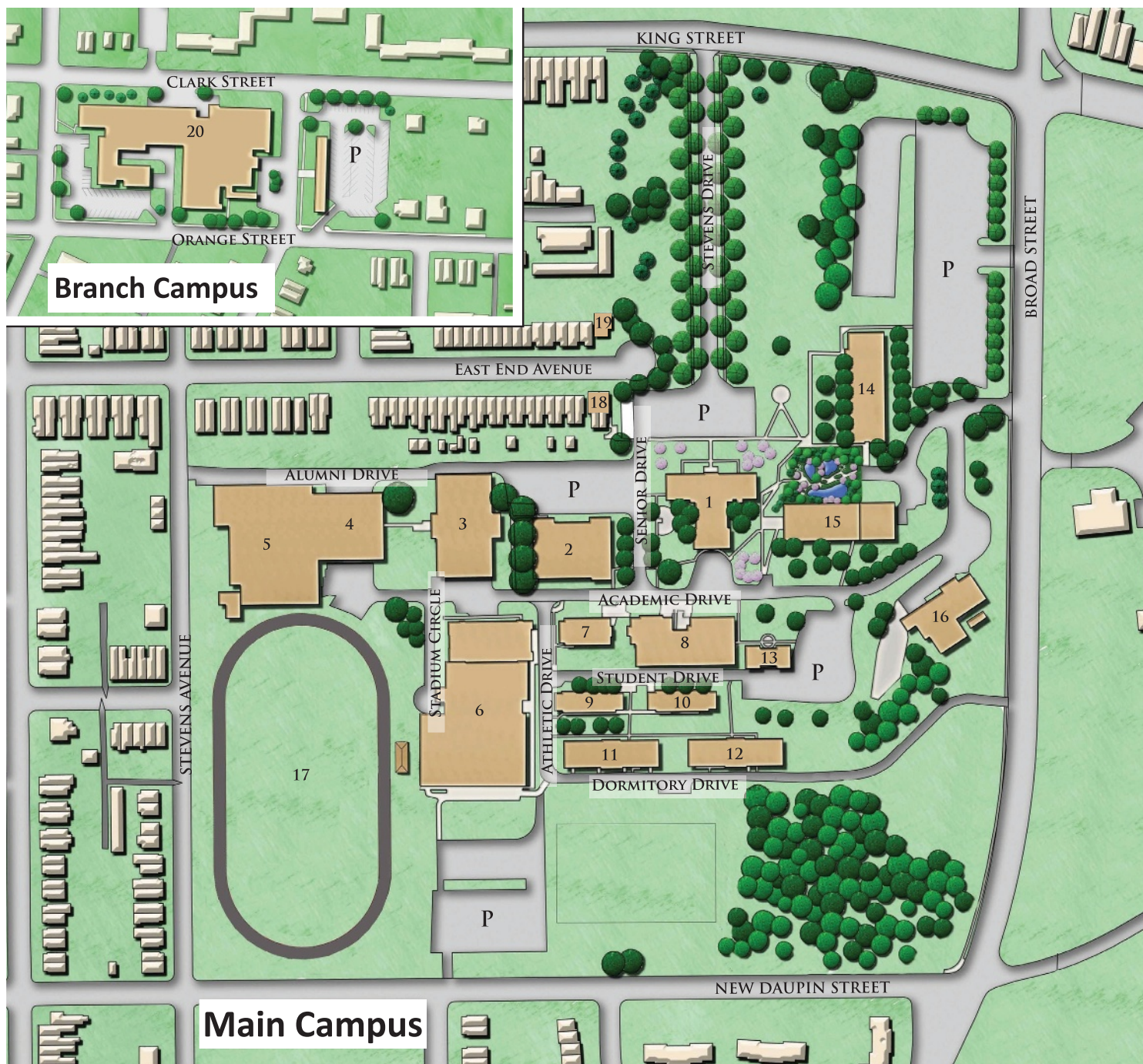
- Construction Electrician Certificate
- General Machinist Certificate
- Masonry Construction Certificate

# board of trustees

Richard Watson Jr., Chairperson  
Maryann Marotta, Vice Chairperson  
Paul Hoffer, Secretary  
Theodore P. Williams, III, Treasurer  
Patricia Hopson-Shelton  
Ronald Ford  
Dr. Frederick S. Withum, III

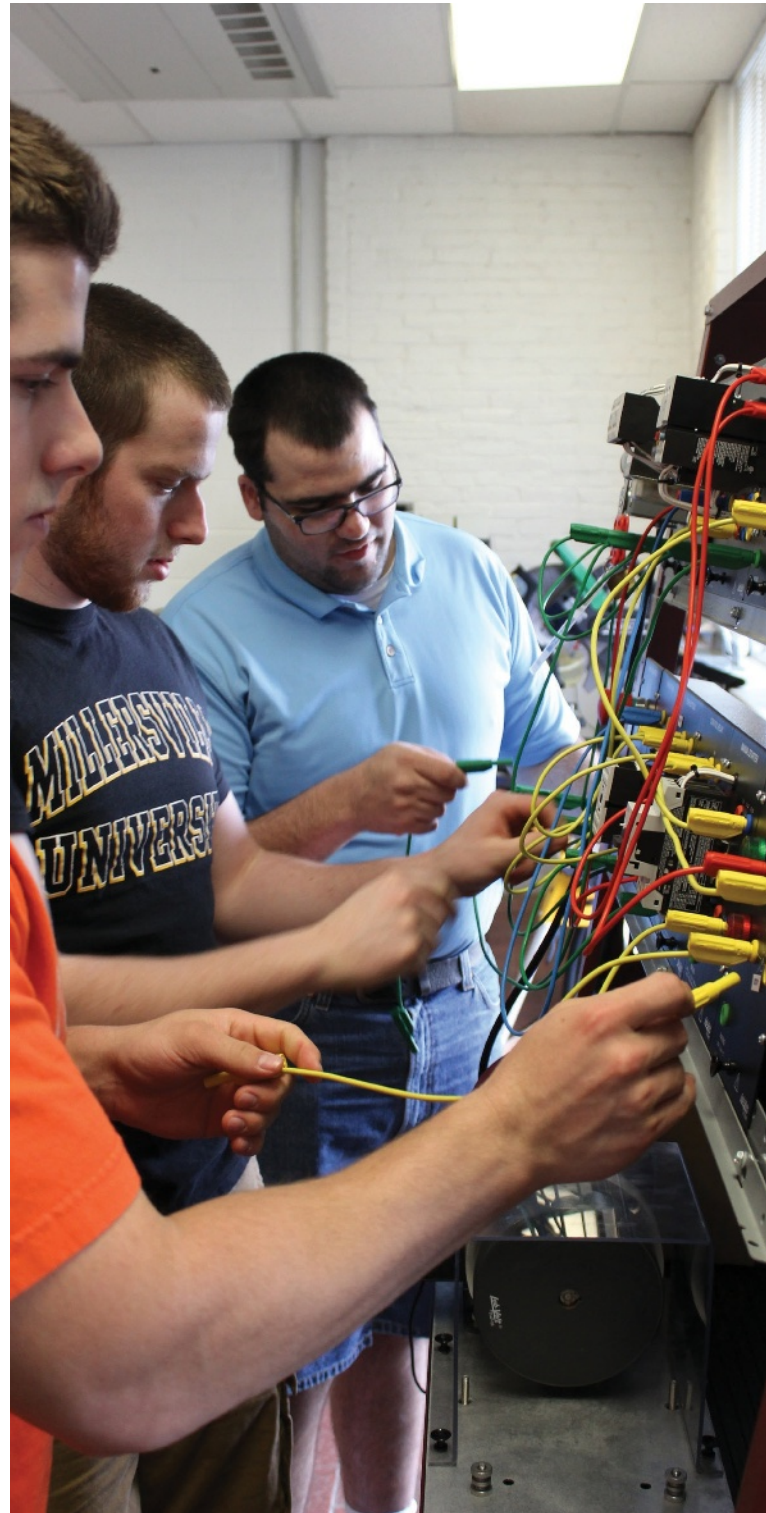








# programs of study



# architectural technology

The profession of architecture touches everyone's life and is central to solving problems in the creation of a built environment. Architectural technicians are problem solvers who work with clients on the design of buildings. They also create plans and specifications that direct the construction of a building and coordinate the work of other professional consultants and engineers.

Managing information and responding to the many diverse requirements of governments, building conditions, and society is increasingly important in the construction industry. The architectural profession is rapidly integrating the technology of computers and automation to assist in the management of information and to free up time for creative work.

The instruction in architectural technology at Thaddeus Stevens College prepares students to become qualified for employment in the architectural profession and to transfer into architectural programs in nationally-accredited universities. The instruction also provides retraining in technological applications for people currently employed in or reentering the profession.

High school prerequisites for this program are Algebra I & II and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate knowledge of architectural presentation skills including perspective, rendering, and illustration.
- Demonstrate skill in freehand drafting, instrument drafting, and sketching.
- Demonstrate knowledge of building structure, materials, and construction methods.
- Demonstrate knowledge of mechanical, electrical, and plumbing building systems.
- Demonstrate knowledge of basic architectural design and building code principles for residential and small commercial projects.
- Apply mathematical skills necessary for architectural technology.
- Apply AutoCAD® to architectural design and drafting problems.
- Explain professional architectural practice.
- Demonstrate knowledge of site planning and design.
- Demonstrate knowledge of architectural terminology.
- Demonstrate oral, written, and visual communication skills.

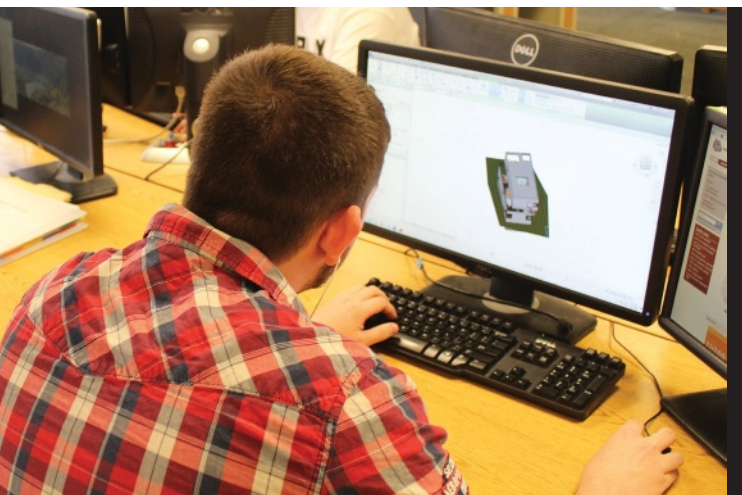
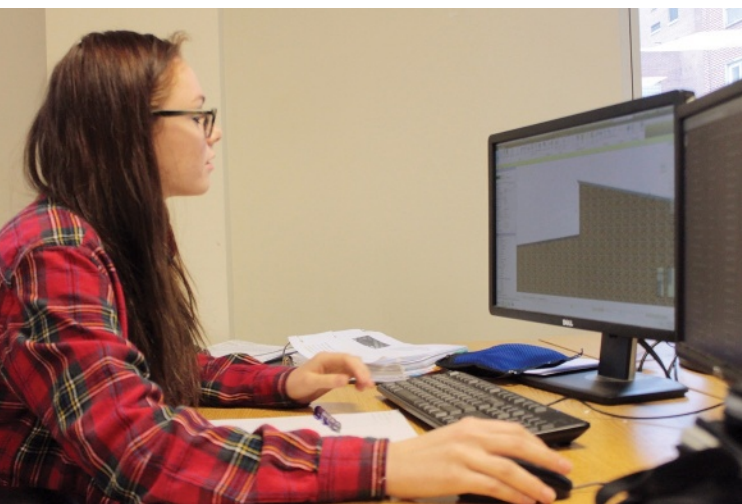
**James E. Hamrick, Professor**

BA: University of Cincinnati  
Registered Architect

Member of American Institute of Architects (AIA)  
Certified Construction Specifier (CCS)

**Kimberly Joy Hitchcock, EdD., Professor**

EdD: Nova Southeastern University  
BA, MA: University of Washington  
Registered Architect



**MODEL SCHEDULE FOR  
ARCHITECTURAL TECHNOLOGY**

**SEMESTER 1**

ARCH 106 - Fundamentals of Architectural Drafting	3
ARCH 111 - Materials of Construction	3
ARCH 116 - Residential Details	3
ARCH 122 - AutoCad Architecture	2
ARCH 123 - Building Information Modeling	2
MATH 137 - Intermediate Algebra	3
CIS 111 - Intro to Computer Applications	3

**SEMESTER 2**

ARCH 156 - Specifications, Estimating, and Contracts	2
ARCH 161 - Working Drawings	4
ARCH 166 - Rendering and Illustrations	2
ARCH 17 - Advanced Cad	3
MATH 141 - Trigonometry*	3
ENG 106 - English Composition	3

**SEMESTER 3**

ARCH 206 - Advanced Methods and Materials of Construction	4
ARCH 211 - Structural Systems	2
ARCH 216 - Site and Microclimate Design	3
PHYS 113 - Statics	3
ENG 216 - Technical Writing*	3

**SEMESTER 4**

ARCH 256 - Environmental Systems	2
ARCH 261 - Life Safety and Building Codes	2
ARCH 266 - Architectural History	1
ARCH 271 - Individual Design Studio	4
ARCH 276 - Group Design Studio	2
Humanities Elective	3

**GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
General Studies Elective	3

**TOTAL CREDITS 69**

# architectural technology (ARCH)

## **ARCH 106 (3 credits)**

### **Fundamentals of Architectural Design**

Serves as an introduction to architectural drafting. Focuses on communication of design concepts and instructions to builders. Investigation and analysis of drawings and other means to communicate architecture. Exploration and development of an individual's communication of ideas and thoughts by means of graphic representation.

## **ARCH 111 (3 credits)**

### **Materials of Construction**

Presents fundamental aspects of the design profession. Involves the application and technology of materials. An appreciation of the limits and the potential of materials is fundamental to well-executed designs. Investigation and analysis of actual materials and their application as a means to give form and substance to creative ideas.

## **ARCH 116 (3 credits)**

### **Residential Details**

Research of specific building elements necessary for construction. Application of knowledge and creativity in the development of details. Typical and standard details applicable to residential construction. Learning how to communicate with the construction crew. Involves sketch details and drafted details. Also requires drawings and exercises showing typical details and drafting skills.

## **ARCH 122 (2 credits)**

### **Autodesk® Architecture®**

Intensive introduction to CAD including computer literacy, hardware, software, input, output, printing, introductory computer drafting skills, and completion of specific drawing exercises. Instruction is based on current Autodesk® Architecture® (the industry standard software program). Use of CAD to draw architectural elements such as floor plans, lighting, furniture, wall treatments, and other related elements.

*Co-requisite: ARCH 123*

## **ARCH 123 (2 credits)**

### **Building Information Modeling (BIM)**

Course teaches students to design and construct using building information modeling (BIM) methodology. BIM employs the concept of parametric modeling by assigning information to three-dimensional objects and automatically updating building components as the model changes or evolves. Using BIM, students generate orthographic drawings and supporting documentation, which may include specifications, schedules, cost management, etc. BIM provides continuous and immediate feedback for students. Through this course, students will become competent in using BIM as a new and efficient way for multi-disciplines to work collaboratively. The software used for this course is Autodesk® Revit®.

*Co-requisite: ARCH 122*

## **ARCH 156 (2 credits)**

### **Specifications, Estimating, and Contracts**

Introduction to three important aspects of architectural technology: Construction specifications, estimating, and design services contracts. Students learn about the differences between residential, commercial, and federal specifications. The basics of cost estimating for construction is also incorporated, along with simple cost estimates using calculators and computers. Students learn about the provisions that make up typical design services and construction contracts, the legal language, the link between contracts, government regulations, and working drawings.

## **ARCH 161 (4 credits)**

### **Working Drawings**

Students design their own houses in this capstone course, creating a complete set of working drawings including site plans, floor plans, elevations, building sections, wall sections, details, and schedules. Students prepare preliminary presentation drawings; create a presentation model and a structural model; and prepare a full set of working drawings. CAD is used to prepare all drawings.

## **ARCH 166 (2 credits)**

### **Rendering and Illustrations**

Students learn how to use perspective, color, shadow, and computer-aided animation and rendering to illustrate architectural design. Work in this course builds on skills explored in previous courses.

*Prerequisite: ARCH 106*

## **ARCH 172 (3 credits)**

### **Advanced Computer-Aided Drafting (CAD)**

An intensive follow-up to ARCH 122 and 123, this course uses AutoCAD® for efficient production of architectural drawings. Completes the development of a solid foundation of CAD skills designed to give students appropriate entry-level CAD skills.

*Prerequisites: ARCH 122 and ARCH 123 (minimum grade of "D" in both)*

## **ARCH 206 (4 credits)**

### **Advanced Methods and Materials of Construction**

Detailed investigation of commercial construction systems with a more in-depth review of construction materials than introduced in the first year. Materials considered in a systems approach, including floor, wall, roof, glazing, and finish systems. Selected criteria of cost, installation, long-term material performance, limitations, and whole-building integration are identified for individual materials.

*Prerequisite: ARCH 161*



**ARCH 211 (2 credits)****Structural Systems**

Historical development of structures. Includes the loads and stability of structures. Identifies various stresses, including tension, compression, sheer, and bending. Looks at design requirements, characteristics, limitations, and rules of thumb utilizing wood, steel, and concrete systems; analyzes beams, columns, frames, trusses, and connection components and details in structural design.

**ARCH 216 (3 credits)****Site and Microclimate Design**

Specifies site parameters and impact on building design from site investigation to finished project. Reviews initial design concerns, site vegetation, terrain, winds, waterways, solar access, and seasonal effects. Building design issues are landscaping, grading and drainage, site utilities, paving and roadways, and site amenities.

**ARCH 256 (2 credits)****Environmental Systems**

Theory, history, design, and explanation of systems affecting building environmental quality. Includes review of plumbing, water, and sanitary systems; the options available in the selection of heating, ventilating, and air conditioning systems; and an energy overview (thermal control, heat load analysis, utilization of solar alternatives, and understanding of indoor air quality concerns). Electrical equipment requirements and loads, artificial and natural lighting and illumination criteria and fixtures are covered, as well as acoustical control construction practices and vertical transportation impact on building design.

**ARCH 261 (2 credits)****Life Safety and Building Codes**

Philosophy and approaches to life safety, including fire protection systems and the impact of various types of construction on life safety. Traces evolution of building codes and analyzes the building code compliance of various hypothetical case studies. Covers means of egress and construction system assemblies. Reviews barrier-free design requirements and implication on project design.

**ARCH 266 (1 credit)****Architectural History and Theories of Design**

Overview of architecture, from prehistoric to the 20th century and beyond, including Ancient, Middle Ages, Renaissance, Eastern, Colonial, and Modern. Stylistic characteristics of historical architecture reviewed and analyzed with specific concentration on American architecture. Includes history of urban design and the current changing face of the building environment, from city and suburb to farm.

**ARCH 271 (4 credits)****Individual Design Studio**

Utilization of material learned throughout the previous three semesters. Students select commercial/institutional building type and design the entire building, from initial design concept to completion of construction documents. Students are responsible for building programming, square footage requirements, design concept, and integration of site, architectural, structural, mechanical, and electrical considerations. Finished project includes a written building program, construction drawings, outline specification, and presentation graphics.

**ARCH 276 (2 credits)****Group Design Studio**

Project simulates a real-world approach to professional practice by involving the design of a hypothetical renovation and addition to an existing campus building. Small student teams are responsible for delegating all project tasks and monitoring project deadlines and completion dates. At the end, a group effort includes initial design concept, construction budget estimates, construction drawings, outline specifications, and presentation graphics.

**ARCH 320 (3 credits)****Understanding Greece: Art, Architecture History, Mythology**

A twelve-day guided tour of architectural sites in Greece. The focus is on understanding the contribution of Greece to Western architecture. Studying architecture exposes students to the social, political, economic, and technological history of Greece. Introductory lectures prepare students before the course, which is offered at the end of the spring term.

**ARCH 340 (3 credit)****Understanding Italy's History through Its Art and Architecture**

A ten-day guided tour of architectural sites in Italy. The focus is on understanding the contribution of Italy to Renaissance art and architecture. Studying art and architecture exposes students to the social, political, economic, and technological history of Italy. Introductory lectures prepare students before the course, which is offered during the spring break of the spring term.

**ARCH 360 (3 credits)****Understanding Spain's History through Its Art and Architecture**

A ten-day guided tour of architectural and cultural sites of Spain. The focus is on understanding the contribution of Spain to world of art and architecture. Studying art and architecture exposes students to the social, political, religious, economic, and technological history of Spain. Introductory lectures prepare students before the course, which is offered during the spring break of the spring semester.

# automotive technology

Automotive Technology is designed to give students a basic understanding of automotive construction, theory of operation, and standard industry service and repair procedures. This instruction gives them not only the knowledge to perform vehicle service but to develop the skills necessary to diagnose unit malfunctions. Two of the most important skills that will be developed are problem solving and critical thinking.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Diagnose and repair common malfunctions of the following automotive systems: engine lubrication and cooling; brake, suspension, steering, wheels and tires, electrical (including wiring, batteries, starting, charging, and ignition), fuel, onboard electronics/computers, and engine assemblies; and power train components including manual and automatic transmissions and transaxles.
- Develop the knowledge and skills to operate the latest generation of computerized test and diagnostic equipment, including digital storage lab scopes, onboard scan tools, and a chassis dynamometer, as well as develop skills in the safe operation of a chassis dynamometer.
- Develop sound, basic, and safe automotive shop practice skills, including environmental protection.
- Develop good basic shop habits, including demonstrating a good attendance record, punctuality, a willingness to work, and an ability to work with others as a team.
- Apply basic laws of physics/scientific principles to automotive systems and components when performing in-shop testing exercises and diagnosing problems. This includes exam questions containing diagnostic questions.
- Record diagnostic testing data and reports using necessary mathematics; solve basic problems using elementary algebra.
- Locate and interpret technical data represented in shop repair manuals, diagnostic charts, and wiring diagrams. This data will be in hard print and/or various electronic media sources.
- Demonstrate good automotive shop management practices, including student management, customer relations, shop procedures, and writing repair orders.
- Prepare to take and pass the ASE automotive tests series after successful completion of this program and having at least one additional year of on-the-job experience in the particular area or areas that will be tested.
- Prepare to accept the challenge of continuous training in the automotive field, that is, learning to learn, which will be necessary to adapt to new technologies and to become a problem solver and a critical thinker.
- Obtain the Pennsylvania Auto Safety Inspection Certificate and the Pennsylvania Emissions tester certificate.

**Martin Christian, Assistant Professor**

AAS: Thaddeus Stevens College of Technology  
PA Vocational Certificate in Automotive Technology  
from Penn State University

PA Certificate of State Inspection Instructor  
PA Certificate of Emission Inspection Instructor  
PA Certified Emission Repair Technician  
ASE Certified Master Technician, A1-A8  
ASE Certified Advanced Engine Performance  
Specialist L1  
ASE Certified Master Engine Machinist  
ASE Certified Heavy Truck Technician T2 and T6  
ASE Certified Under Car Specialist  
GM Certified Technician

**Victor Gibson, Instructor**

AAS: Thaddeus Stevens College of Technology  
PA Certified Emission Repair Technician  
ASE Certified Under Car Specialist  
ASE Master Auto Technician A1-A8  
ASE Certified Advanced Engine Performance  
Specialist L1

**MODEL SCHEDULE FOR  
AUTOMOTIVE TECHNOLOGY****SEMESTER 1**

AT106 - Automotive Service Fundamentals	2
AT111 - Internal Combustion Engine Service	4
AT116 - Chassis Service/Steering & Suspension	3
MATH 126 - Technical Math I	3
CIS111 - Intro to Computer Applications	3

**SEMESTER 2**

AT156 - Automotive Brake Systems	3
AT161 - Automotive Electrical/Electronic Principles	4
AT166 - Engine Electrical/Electronic Principles	4
AT171 - Fuel and Emission Systems	4
PHYS 106 - Physics for Everyday Life (or higher)	3
ENG 106 - English Composition	3

**SEMESTER 3**

AT206 - Advanced Engine Diagnosis	3
AT211 - Advanced Chassis Service	3
AT216 - Independent Diagnosis and Repair	3
AT222 - Pennsylvania Safety Inspection/Enhanced Emissions Inspection Certification	2
ENG 221 - Public Speaking, OR	
ENG 216 - Technical Writing*	3
Humanities Elective	3

**SEMESTER 4**

AT256 - Heating and Air Conditioning	2
AT261 - Drive Train and Manual Transaxle Service	3
AT266 - Advanced Engine Computer Control Analysis	3
AT271 - Automatic Transaxle Service	4
AT276 - Fuel Injection Systems	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
Elective - General Studies Elective	3
Elective - General Studies Elective	3

**TOTAL CREDITS** **75**

# automotive technology (AT)

## **AT 106 (2 credits)**

### **Automotive Service Fundamentals**

This course presents an overview of the automotive industry, including an introduction to the automobile and its systems. Jobs in the automotive service field are covered as are shop work and service information and how to find it. Electronic information systems Mitchell 1 and ALLDATA are utilized. Safety in the auto shop, including the proper use of basic hand and common power tools, is demonstrated. Environmental protection is taught, including recycling and the proper use and approved disposal methods of common automotive shop chemicals are discussed. Demonstrations and hands-on training in common automotive shop practices, such as tube flaring and thread construction and repair. Fasteners, including torque to yield are thoroughly covered. Measurement systems, USC and metric, are discussed, including hands-on training using all common automotive precision measurement tools like micrometers, dial indicators, and torque wrenches. The theory and servicing of automotive rolling bearings are covered; wheel bearings are emphasized.

## **AT 111 (4 credits)**

### **Internal Combustion Engine Service**

This course covers the basic theory, design, and operating fundamentals of spark ignition piston engines. Extensive mechanical testing and diagnostic procedures are demonstrated, including compression and vacuum testing utilizing wave form analysis with lab scopes. Power balance, including both intrusive and non-intrusive are demonstrated. Running and snap-throttle compression testing are featured. Methods to check valve timing on pushrod and overhead cam engines are demonstrated. Engine lubrication systems and automotive lubricants are studied; diagnostic and test procedures are performed. Engine cooling systems, theory, and standard service procedures are also included. Machining of engine components and restoring of all tolerances are covered. Cylinder head servicing is performed, and the three-angle cut method is used. Complete disassembly, all precession measurements, component servicing, resealing and reassembly on actual engines takes place.

*Prerequisite: AT 106*

## **AT 116 (3 credits)**

### **Chassis Service/Steering and Suspension**

The basic theory and operating principles of automotive suspension and steering systems are studied; service, repair and diagnostic procedures are featured. Tire and wheel service and computer balancing are performed by students. The Hunter Road Force wheel balancer and vibration solver, Model 9700 is featured. Even the widest tires mounted on the newest custom wheels will be no problem when learning to use the Hunter Model TS3500 tire changer. The safe and proper method of airbag module handling is taught. Wheel alignment principles are covered, including both the simple basic maintenance wheel alignment and the more complicated diagnostic wheel alignment. Complex alignment factors such as tire scrub radius, included angle and steering axis inclination, is covered in depth. Hands-on tire and wheel servicing, pre-alignment inspections, and wheel alignment measurements are taken on live vehicles.

## **AT 156 (3 credits)**

### **Automotive Brake Systems**

Modern automotive brake systems and their operating principles are studied and standard repair and service procedures are performed. Drum, disc/drum, and four-wheel disc systems are featured. Power-assist systems and parking brake systems are included. An introduction to the theory and servicing of antilock brake systems, including first generation Bosch type and the newest non-integral systems, are covered. Trouble code retrieval and onboard diagnostics using scan tools is featured.

## **AT 161 (4 credits)**

### **Automotive Electrical/Electronic Principles**

The theory of electricity—including Ohm's Law, Kirchhoff's Law, series and parallel circuits, AC and DC current flow—is studied. Basic test meter procedures are featured, and solid state devices, integrated circuits, and on-board microcomputers are explained. Automotive wiring and common automotive accessory systems are studied, and servicing and repair procedures are performed. Automotive batteries, their construction, theory of operation, and standard service procedures are also included. Hands-on extensive electrical system service is performed using digital volt ohm meters and automotive lab scopes. The PDI DVOM, the Fluke 98 Series II, Vetronix Master Tech, and the cutting-edge Vetronix MTS 5100/5200 lab/ignition scopes are all featured. Low resolution amp clamps from Fluke and Vetronix allows students to experience the latest diagnostics using the latest amp-ramping diagnostic procedures. New material has been incorporated into the electrical and fuel and emissions courses after the instructors attended drive ability training/seminars hosted by such nationally recognized "gurus" as Jim Linder, Linder Technical Services, Indianapolis; Bill Fulton, Ohio; Jerry Truglia, New York; Dan Marrinucci, Motor Magazine; and Mac Vanden Brink, Michigan.

## **AT 166 (4 credits)**

### **Engine Electrical/Electronic Principles**

Cranking circuits and starter motors, charging systems, alternators and voltage regulators, and ignition systems (DIS & EI, including C.O.P./coil on plug) are studied. Simulators are featured to help students better understand system operation. Construction, theory of operation, standard service procedures, and system malfunction diagnosis are covered using the latest test equipment; the new Vetronix MTS 5100/5200 lab scope/engine analyzers, and the Fluke 98 series II is featured. Hands-on comprehensive testing procedures are performed on live vehicles. One of the major goals of this course is for students to gain skills in problem solving through the use of on-car testing and diagnostic procedures. This course culminates with each student performing comprehensive tests on the engine mechanical condition, battery, cranking system, charging system, and the complete ignition system. This is followed by a report analyzing good/bad results.

*Prerequisite: AT 111*



**AT 171 (4 credits)**  
**Fuel and Emission Systems**

The principles of fuel systems are studied. Fuel delivery systems and fuel pump testing are covered. The history of emissions control systems, from their inception up to the present, is included. Control system theory and operating principles are studied. Service and testing procedures are demonstrated, and on-car tests are performed on all the major emissions systems. The latest evaporative leak tester smoke machines that use nitrogen is used for training. Standard and feedback carburetor operating principles are still briefly covered. Introduction to alternative fuels, electric, and hybrid vehicles are presented. Highlights of the latest Pennsylvania Emissions Testing procedures is featured, and the groundwork of 5-gas diagnostic testing is laid.

**AT 206 (3 credits)**  
**Advanced Engine Diagnosis**

Covers the use of the Vetronix MTS 5100/5200 Engine Analyzer, Vacutec Leak Detector, and the Mustang Chassis Dynamometer. Theory-related instruction is given on 5-gas analysis and interpreting the results of the analyzer tests with special emphasis on how they relate to advanced diagnosis of ignition, carburetion, fuel injection, charging, cranking, and engine and emission control systems. Demonstrations on hookup and operation are followed by student practice on shop vehicles, and when possible, by repair of client vehicles.

*Prerequisite:* AT 166

**AT 211 (3 credits)**  
**Advanced Chassis Service**

The Hunter P611 four-wheel aligner featuring the DSP400 Series Sensors (cameras) and the DSP300 Series Sensors are used in this course. Theory-related instruction is given on alignment with special emphasis on 4-wheel alignment. Disc and drum brake machining along with applying non-directional finishes on the AMMCO brake lathe are covered. On-the-car rotor truing is covered featuring the Pro-Cut PFM-900 Smart Lathe. Demonstrations on hook-up and operation are followed by student practice on shop vehicles, and when possible, by repair of client vehicles.

*Prerequisites:* AT 116 and AT 156

**AT 216 (3 credits)**  
**Independent Diagnosis and Repair**

Opportunity to diagnose and make repairs on client vehicles in a simulated dealership atmosphere. Experience acting as shop forepersons, using and writing repair orders, ordering parts, and keeping track of hours on the job and using materials. All repairs relate to the courses taken.

**AT 222 (2 credits)**  
**Pennsylvania Safety Inspection/Enhanced Emissions Inspection Certification**

Pennsylvania Department of Transportation Vehicle Equipment and Inspection Regulation /Enhanced Emissions Inspector manuals are covered, as per state requirements. A demonstration of the proper procedure for performing a safety inspection on a vehicle is given. Students practice on shop vehicles. Each student is given the opportunity to take the Pennsylvania Safety Inspection written and performance tests along with the Enhanced Emissions written test and computer-based training/tactile test. The Commonwealth, upon satisfactory completion of these tests, will grant a license for each.

**AT 256 (2 credits)**  
**Heating and Air Conditioning**

Covers the theory of refrigeration and the operating principles of manual and automatic temperature control systems, with special emphasis on diagnosis, service, and repair. Refrigerant recovery, recycling, identification, and recharging techniques on R-12 and R-134a systems are covered in accordance with federal law. The Sun Air-Kare charging station, Everco EREC Recovery/Recycle station, and the Robinair Enivro Charge Combination are featured. Demonstrations given on hook-up, operation, and servicing, followed by student practice on shop vehicles, training aids (clutch and seal replacement) and repair of client vehicles.

**AT 261 (3 credits)**  
**Drive Train and Manual Transaxle Service**

Basic operating principles of manual transaxles, differentials, clutches, and universal joints. C-V joints, drive axles, and drive shafts, along with diagnosis and basic service techniques. Demonstrations given on differential set-up, replacing universal and C-V joints, also clutch replacement and adjustment. Students practice disassembly, precision measurements, adjustments and assembly techniques on training aids and work on client vehicles when possible.

**AT 266 (3 credits)**  
**Advanced Engine Computer Control Analysis**

Sensor-related theory, testing procedures, and waveform analysis are studied. OBD-II theory and the related testing procedures are covered. How to use shop manuals to follow manufacturers' procedures for troubleshooting engine drivability problems on computer-controlled cars, along with lab scopes (Fluke 98 Series II), break out boxes, and the Master Tech 3100 hand-held scanner are used to recover trouble codes from the computer's memory and reading sensor stream data. Emphasis is placed on the diagnosis and the interpretation of the results. Students practice on shop vehicles and repair client vehicles when possible.

**AT 271 (4 credits)**  
**Automatic Transaxle Service**

Basic principles of automatic transmissions, including lock-up torque converters, diagnosis, and basic service techniques. Chrysler 40TE electronic transaxle theory is covered. Demonstrations given on pressure checks and shift points, using gauges and a chassis dynamometer. Students practice disassembly, precision measurements, testing, adjustments, and assembly techniques on training aids. Where possible, repair on client vehicles is included.

**AT 276 (3 credits)**  
**Fuel Injection Systems**

The basic operating principles of the Bosch mechanical fuel injection system along with Chrysler and G.M. throttle body and port systems are covered in this course. Special emphasis is placed on diagnosis and service techniques. The EMI-TECH fuel system analyzer is featured. Cleaning a fuel injection system on the vehicle is covered featuring the Bilstein EFI-800 fuel system service center. Students practice on shop vehicles and work on client vehicles when possible.

*Prerequisite:* AT 171

# business administration

All employers need highly skilled business personnel to keep their operations running smoothly and successfully. Dynamic careers in business are available in virtually every sector of the economy. Job openings are plentiful, working conditions are comfortable, and opportunities for advancement are within reach for those with a two-year degree.

The Business Administration program at Thaddeus Stevens College provides students with the marketable skills, academic background, and experience required to meet the needs of the workforce or transfer to a four-year university. The broad-based curriculum is designed to prepare recent high school graduates or those re-entering the workforce to reach their full potential in many varied business fields. Faculty are focused on training students to manage rapidly changing technology, lead and motivate others, prepare and analyze financial information, and succeed in the global marketplace. Entry-level job titles for recent graduates include sales and service account manager, accounts payable and receivable clerk, administrative assistant, public relations coordinator, operations coordinator, small business owner, human resources assistant/specialist, and facility supervisor.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate excellent communication skills, including the ability to speak and write clearly and effectively, especially for the business setting.
- Demonstrate an understanding of emerging online technologies and trends and their influence on the electronic commerce marketplace.
- Use critical thinking and mathematical skills to analyze and solve accounting and business math problems.
- Demonstrate advanced keyboarding skills as well as spreadsheet, database management, word processing, and presentation applications.
- Assess and influence behavior among peers, subordinates, and managers; work well as an individual, in groups, and on teams.
- Demonstrate an understanding of the marketer's tasks and knowledge in the principles of how those tasks can be accomplished.
- Investigate the basic practices and principals involved in the administration of a modern business, and evaluate various career paths that may be pursued.
- Predict managerial success by studying the primary theories, principals, and processes of management.
- Demonstrate an understanding of the judicial process and business law in areas such as leases, contracts and employment law, and how they impact various forms of business organizations.
- Display a general knowledge of the social sciences and understand their effect on the workforce and society.

**Elizabeth A. Wagman, Professor**

MEd: The Pennsylvania State University

BS: Shippensburg University of Pennsylvania

**Cathy U. Walls, Professor**

MS, BS: Bloomsburg University of Pennsylvania



**MODEL SCHEDULE FOR BUSINESS ADMINISTRATION**

**SEMESTER 1**

BUAD 117 - Introduction to Business	3
BUAD 121 - Business Skills Lab	1
BUAD 160 - Principles of Management	3
BUAD 166 - Business Computer Applications I	3
ENG 106 - English Composition	3
MATH 137 - Intermediate Algebra (or higher)	3

**SEMESTER 2**

BUAD 157 - Principles of Marketing	3
BUAD 171 - Business Skills Lab	1
BUAD 257 - Electronic Commerce	3
BUAD 266 - Business Computer Applications II	3
ENG 221 - Public Speaking	3
ECON 230 - Principles of Microeconomics	3

**SEMESTER 3**

BUAD 106 - Accounting Principles I	3
BUAD 213 - Introduction to Law and Business Law	3
BUAD 221 - Organizational Behavior	3
BUAD 226 - Business Skills Lab	1
BUSN 106 - Small Business Management	3
ECON 240 - Principles of Macroeconomics	3

**SEMESTER 4**

BUAD 156 - Accounting Principles II	3
BUAD 267 - Human Resources Management	3
BUAD 271 - Business Skills Lab	1
BUAD 276 - Communications	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE - General Education Elective	3
ELECTIVE - General Education Elective	3

**TOTAL CREDITS 65**



# business administration (BUAD)

## **BUAD 106 (3 credits)** **Accounting Principles I**

Introduction to the principles of accounting, the accounting cycle, the interpretation and recording of financial data, and the summarizing and reporting process. Emphasis is on the sole proprietor of a business. This course provides a foundation for further study in the accounting field.

## **BUAD 117 (3 credits)** **Introduction to Business**

This course is designed to introduce students to the primary fields of business and to inform them of the various career paths that they may pursue. The basic principles, forms, and practices involved in the administration of a modern business are examined.

## **BUAD 121 (1 credit)** **Business Skills Lab**

Keyboarding skills are needed in many positions in today's job market. Advanced keyboarding and communication skills are essential in the business field. This course is designed to improve keyboarding proficiency and language arts skills in the production of business correspondence.

## **BUAD 156 (3 credits)** **Accounting Principles II**

This course is a continuation of Accounting Principles I. Instruction focuses on partnerships and corporations. Analysis and discussion of more complex financial concepts and statements are conducted. Microsoft Excel® spreadsheets are used to prepare financial problems and statements.

*Prerequisite: BUAD 106*

## **BUAD 157 (3 credits)** **Principles of Marketing**

An interactive approach to guide students in becoming better business people. The skills and responsibilities of planning, producing, pricing, promoting, and distributing is presented as an art and a science through realistic marketing situations and case studies.

## **BUAD 160 (3 credits)** **Principles of Management**

This course is designed to prepare BUAD students for management success by studying the primary theories, principals and processes of management. Students will gain valuable insight in issues such as leadership, planning and control, problem solving and creativity, organizational culture and change, ethics and social responsibility, and working in and managing groups.

## **BUAD 166 (3 credits)** **Business Computer Applications I**

Microsoft Office programs (Excel®, Access®, PowerPoint®, and Outlook®) are studied in order for students to develop intermediate skills in spreadsheet, database, e-mail, and presentation applications.

## **BUAD 171 (3 credits)** **Business Skills Lab**

Designed to provide students with independent keyboarding practice and desktop publishing experience. An introduction to Microsoft Publisher® covers the basics, such as how to use the Publisher window to create typical business publications. Advanced keyboarding skills are developed through daily practice using the Mavis Beacon typing tutorial.

## **BUAD 213 (3 credits)** **Introduction to Law and Business Law**

Designed to give students an introduction to the sources of law, judicial process, and an overview of laws including criminal law, tort law, property law (including personal property, real estate, and landlord-tenant law), and wills, estates, and trusts. Also provides a basic understanding of contracts, sales and leases of goods, secured transactions, agency and employment law, and forms of business organizations

## **BUAD 221 (3 credits)** **Organizational Behavior**

This course is a study of workplace behaviors, structures, and processes. Self-analysis and reflection are practiced in small groups through case studies, surveys, and discussion. Motivational theories and leadership styles are surveyed; decision making and business designs and cultures are investigated.

## **BUAD 226 (1 credit)** **Business Skills Lab**

Accounting lab for working individually and in groups to complete accounting problems and worksheets. Additional assignments in related business coursework due weekly.

## **BUAD 257 (3 credits)** **Electronic Commerce**

Overview of emerging online technologies and trends and their influences on the electronic commerce marketplace. Explores nature and impact of e-commerce on business operations, resources, and management. Upon completion of the course, students will have a firm grasp of global e-commerce business trends and the technologies required to implement them.

**BUAD 266 (3 credits)**  
**Business Computer Applications II**

Students develop advanced computer skills in Microsoft Office® applications. Exercises based on real-life business situations give students hands-on experience in Excel®, PowerPoint®, Access®, and Outlook® programs. Lessons are structured to prepare students for Microsoft certification testing at the expert level, and all courseware is Microsoft-approved.

*Prerequisite: BUAD 166*

**BUAD 267 (3 credits)**  
**Human Resources Management**

This course prepares students to work in administrative and management positions and serves as a basis of further study in the field of human resources management. In accordance with suggested Society for Human Resource Management (SHRM) guidelines, both personal competencies and business policies are addressed in this course.

**BUAD 271 (1 credit)**  
**Business Skills Lab**

QuickBooks® software training. Self-paced and guided learning to learn to use this popular accounting program.

**BUAD 276 (3 credits)**  
**Business Communications**

A practice in writing, revising, and editing business communications, including memos, business letters, e-mail messages, reports, web-based information, and job search documents. The ability to convey information in a clear, concise manner is developed along with critical thinking and communication skills.



# cabinetmaking & wood technology

Repeated surveys of the woodworking industry have revealed the number one concern facing the industry for the 21st century is the lack of skilled and motivated workers. There is a continual need in the furniture, kitchen cabinet, and architectural millwork industries for persons possessing the skills and knowledge required to produce high quality wood products.

The Cabinetmaking and Wood Technology program is committed to continually providing students with the skills and knowledge required for rewarding jobs in the various woodworking industries. Based upon the belief that students learn best by working on projects, this program is strongly project-oriented.

Hence, students will produce several pieces of fine furniture after which they will further develop and display their skills by producing an advanced wood project of their choosing. Through the use of the College's housing project, students will learn to list and produce all the millwork items required for a residential house. Additionally, students will design, produce, finish, and install a complete kitchen. Through the use of lectures, demonstrations and the above projects, the program faculty feel they can best prepare students for careers in any of the three major woodworking fields: fine furniture, architectural millwork, and kitchen cabinetry.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Identify nomenclature and the proper use of hand and portable power tools.
- Apply the knowledge of wood as a material in the proper construction of various fine furniture projects.
- Demonstrate safe practice in the use and setup of trade machinery.
- Demonstrate skill in the use of drafting equipment in order to produce shop drawings.
- Read shop blueprints to develop accurate material lists.
- Demonstrate knowledge of finishing materials along with the skills required for wood finishing including the following: wood preparation, wood coloring using various stains, and top coating using oil finishes, shellacs, varnishes, and lacquers.
- Demonstrate the ability to list and prepare millwork items required for various building projects.
- Demonstrate proficiency in grinding knives for the shaper and moulder and the setup of machines for production.
- Demonstrate the ability to produce jigs and fixtures required for production work.
- Demonstrate the skills and knowledge necessary for kitchen layout, design, construction, and installation.
- Develop the skills and knowledge required for producing various types of countertops.
- Develop a strong work ethic along with the ability to work independently and as a contributing member of a team.



**Stephen P. Latta, Professor**

MA: The Pennsylvania State University  
BS: Ohio University  
Member of Executive Committee for The Society of  
American Period Furniture Makers  
Certification from DeVilbiss Corporation in  
Spray Finishing Technologies  
Member of the Furniture Society  
Contributing Editor to Fine Woodworking Magazine  
Juried Member: Pennsylvania Guild of Craftsmen

**Robert S. Tobias, Associate Professor**

BS: The Pennsylvania State University  
Architectural Woodwork Institute (AWI) Central PA Chapter  
Board of Directors  
National Kitchen and Bath Association  
Cabinetmaking Technical Expert SkillsUSA World Team -  
Calgary, Canada, 2009  
Rio de Janeiro, Brazil, 2010  
London, United Kingdom, 2011  
San-Paulo, Brazil, 2012  
Leipzig, Germany, 2013  
Bogata, Columbia, 2014  
Cabinetmaking Deputy Chief Expert SkillsUSA World Team  
- San Paulo, Brazil, 2015  
Abu Dhabi, United Arab Emirates, 2017



**MODEL SCHEDULE FOR  
CABINETMAKING & WOOD TECHNOLOGY**

**SEMESTER 1**

CABM 106 Hand Tools and Portable Power Tools	4
CABM 111 Furniture Construction I	4
CABM 116 Finishing I	1
CABM 121 Related Drawing I	2
MATH 126 Technical Mathematics I (or higher level math)	3
CIS 105 Drawing with AutoCad	3

**SEMESTER 2**

CABM 151 Advanced Machinery	3
CABM 156 Furniture Construction II	4
CABM 161 Finishing II	1
CABM 166 Job Management	1
CABM 171 Related Drawing II	2
CIS 111 Intro to Computer Applications or BUSN 106 Small Business Management	3
MATH 132 Elementary Geometry (or higher level math)	3

**SEMESTER 3**

CABM 206 Advanced Wood Project	6
CABM 211 Machine Maintenance	1
CABM 221 Architectural Millwork	4
CABM 226 Custom Woodworking Cutters	1
ENG 106 English Composition	3
Science Elective	3

**SEMESTER 4**

CABM 251 Shop Operations and Management	1
CABM 261 Kitchen Cabinet Planning & Estimating	3
CABM 263 Kitchen Cabinet Construction	4
CABM 265 Cabinet Installation	2
CABM 267 Counter Top Fabrication	2
Humanities General Education Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
Elective General Studies Elective	3

<b>TOTAL CREDITS</b>	<b>71</b>
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# cabinetmaking and wood technology (CABM)

## **CABM 106 (4 credits)**

### **Hand Tools and Portable Power Tools**

Students study the wide variety of hand tools, building a thorough foundation in hand tool usage, maintenance, and sharpening. They will learn the basics of hand joinery and develop an understanding for the capabilities and proper usage of portable power tools. This knowledge will be applied to various projects.

## **CABM 111 (4 credits)**

### **Furniture Construction I**

This course provides a foundation for the construction of various types of cabinetry and furniture. The course includes an overview of wood characteristics and joinery methods, assembly, abrasives, adhesives, and veneering basics. Machinery maintenance, safety, and usage is stressed as well. Construction projects will aid in developing an understanding of the subject matter.

## **CABM 116 (1 credit)**

### **Finishing I**

This class focuses on surface preparation and the proper use of finish materials. Various methods of application, including wiping, brushing, and spraying, is addressed. During this introductory course, students apply a wax, shellac, and lacquer finish on the projects completed in class.

## **CABM 121 (2 credits)**

### **Related Drawing I**

An introduction to basic blueprint reading and drafting techniques applicable to the cabinetmaking profession.

## **CABM 151 (3 credits)**

### **Advanced Machinery**

This course teaches the proper set-up and use of the hollow-chisel and slot mortiser, shaper, single-end tenoner, wide-belt sander, and panel saw. The course also provides an in-depth look at the various types of cutters and cutter-heads available for the shaper. Additional machines are added to fit project requirements and available time.

*Prerequisite: CABM 106*

## **CABM 156 (4 credits)**

### **Furniture Construction II**

Students take a more in-depth look at wood properties, joinery, and construction methods. An emphasis is placed on precision machining techniques and strategies for producing molding and other furniture and case components. Other topics include door and drawer construction and styles, hardware and its applications, and an introduction to furniture styles and types. The construction of various furniture projects help solidify the subject matter.

*Prerequisite: CABM 111*

## **CABM 161 (1 credit)**

### **Finishing II**

The finishing course involves the final preparation of wood surfaces and the selection and application of appropriate finishing materials. Topics include dyes and pigmented stains, a variety of sealers and top-coating materials, as well as spray finishing techniques.

*Prerequisite: CABM 116*

## **CABM 166 (1 credit)**

### **Job Management**

This course provides an overview of estimating, cost analysis, and methods of job documentation. Students maintain daily time cards as well as job folders for their various furniture projects. Job folders contain drawings; route and cut sheets; time and cost analysis sheets; bill of materials; materials invoice; and a finishing schedule.

*Prerequisite: CABM 111*

## **CABM 171 (2 credits)**

### **Related Drawing II**

A further study into basic blueprint reading and drafting techniques applicable to the cabinetmaking profession as introduced in CABM 121.

*Prerequisite: CABM 121*

## **CABM 206 (6 credits)**

### **Advanced Wood Project**

From an existing plan of their choice, students construct and finish advanced pieces of furniture. This course emphasizes individual planning and problem solving.

Students construct their own jigs and fixtures as well as machine set-ups. All projects require an existing set of plans and the approval of the instructor before starting. Students are responsible for supplying the necessary materials, hardware, and finishing supplies required for the project.

*Prerequisites: CABM 111, CABM 151, CABM 156, & CABM 161*

## **CABM 211 (1 credit)**

### **Machine Maintenance**

To develop the skills necessary to grind jointer and planer knives, sharpen shaper cutters, and clean and lubricate a variety of common woodworking machines.

*Prerequisite: CABM 151*



**CABM 221 (4 credits)**  
**Architectural Millwork**

This course exposes students to the field of custom architectural millwork. Emphasis is placed on students developing an understanding of the Architectural Woodworking Quality Standards as developed by the Architectural Woodwork Institute. A large portion of the course is devoted to live work in which students produce the millwork items required for the housing project and other related campus work.

*Prerequisites: CABM 111, CABM 151, and CABM 156*

**CABM 226 (1 credit)**  
**Custom Woodworking Cutters**

Students learn how to design, draw, make a template, and grind two matching cutters for the shaper and the moulder.

*Prerequisite: CABM 151*

**CABM 251 (1 credit)**  
**Shop Operations and Management**

This course stresses the fundamentals of ordering, purchasing, estimating, scheduling production, and general management techniques.

*Prerequisite: CABM 151*

**CABM 261 (3 credits)**  
**Kitchen Cabinet Planning and Estimating**

Students learn how to plan, draw, estimate the cost, and list the materials and supplies for the kitchen cabinets and vanities that are used in the housing project.

*Prerequisites: CABM 121 and CABM 171*

**CABM 263 (4 credits)**  
**Kitchen Cabinet Construction**

As follow-up to CABM 261, this course emphasizes the machining, construction, and finishing of the kitchen cabinets, vanities, and trim used in the housing project.

*Prerequisites: CABM 111, CABM 151, CABM 156, and CABM 206*

**CABM 265 (2 credits)**  
**Cabinet Installation**

This course involves site preparation and the installation of kitchen cabinets and bathroom vanities. Emphasis is placed on the installation manuals of the National Kitchen and Bath Association (NKBA).

*Prerequisites: CABM 106 and CABM 263*

**CABM 267 (2 credits)**  
**Countertop Fabrication**

This course involves the fabrication of high pressure plastic laminate and solid surface countertops. Exposure to other types of countertop materials is included.

*Prerequisite: CABM 106*





# carpentry technology

The Carpentry Technology program provides carpentry students with a positive and professional experience. By using the most up-to-date equipment and the newest technology, program faculty strive to always run parallel with the present-day building industry. Students receive 2 years of excellent training that sufficiently prepares them for the residential and light commercial construction workforce.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Write clear, concise, legible, and accurate technical reports and be skilled in oral communication related to the construction industry.
- Demonstrate the basic manipulative skills of the trade that are necessary in laying out work, planning, erecting, and framing.
- Interpret and prepare plans, drawings, codes and specifications, lines, symbols, and abbreviations on working drawings or blueprints.
- Analyze specifications and contract drawings as well as

make accurate quantity take-offs and labor estimations to develop an estimated construction cost for a building project.

- Demonstrate the ability to lay out and erect a platform or western frame structure.
- Demonstrate basic knowledge and skill in masonry and in the concrete construction trade.
- Describe various types of materials and methods available to the construction trade.
- Describe business organization, financing, labor relations, selling, pricing, customer service, management, and other business principles.
- Describe the complexity of the building construction industry, the interrelationships of the various trades, and methods of communication and coordination among all trades and professions within the industry.
- Encourage the practice of staying current with any new technology or codes related to the building industry.

**Timothy B. Draper, Instructor**

AAS: Thaddeus Stevens College of Technology  
Occupational Safety and Health Administration  
(OSHA): Construction Safety & Health Certificate

**Daniel McCord, Instructor**

BS: Millersville University of Pennsylvania

**Daniel B. Noel, Assistant Professor**

BS: Lancaster Bible College  
AST: Williamson Free School of Mechanical Trades  
NCCER Certified Instructor Carpentry Level 4  
Occupational Safety and Health Administration  
(OSHA): Construction Safety & Health Certificate

**Andrew Snavelly, Instructor**

BS: The Pennsylvania State University

**MODEL SCHEDULE FOR CARPENTRY TECHNOLOGY**

**SEMESTER 1**

CARP 106 Hand Tools and Power Tools	3
CARP 111 Building Materials	3
CARP 116 Site Work and Foundations I	3
CARP 182 Construction Drawings & Blueprint Reading	3
ENG 106 English Composition I	3
MATH 126 Technical Math I (or Higher Level Math)	3

**SEMESTER 2**

CARP 157 Floor, Wall, and Ceiling Framing	3
CARP 161 Stair Construction	2
CARP 166 Roof Framing and Materials	3
CARP 177 Exterior and Interior Finish	3
MATH 132 Geometry (or Higher Level Math)	3
CIS 111 Intro to Computer Application	3

**SEMESTER 3**

CARP 207 Floor Construction	2
CARP 209 Wall Construction	3
CARP 218 Roof Construction	3
CARP 219 Thermal Insulation	1
CARP 222 Exterior Finish and Trim	2
English Elective (recommend Eng 216 or Eng 221)	3
BUSN 106 Small Business Management	3

**SEMESTER 4**

CARP 226 Drywall Installation and Finish	1
CARP 257 Stair Trim	2
CARP 267 Interior Finish and Trim	3
CARP 272 Site Work and Foundations II	2
CARP 276 Residential Remodeling	3
Science Elective	3
Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
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**TOTAL CREDITS** **70**



# carpentry technology (CARP)

## **CARP 106 (3 credits)** **Hand Tools and Power Tools**

This course is a general introduction to the basic tools that are used by a carpenter with an emphasis on safety, proper usage and procedures, and various applications that are most commonly used in the carpentry trades.

## **CARP 111 (3 credits)** **Building Materials**

Covering the wide range of building materials used in carpentry, this course examines the many different types of wood products, including engineered lumber and the newest technology of steel framing. Proper procedures for estimating these building materials combined with the variety of fastening methods is also discussed and practiced.

## **CARP 116 (3 credits)** **Site Work and Foundations I**

In this course, students learn how to set up and operate the transit level and laser level. Building layout and excavation of residential construction will be explained, with particular emphasis on building stake-off. Types of footers, foundations, and concrete forming are also explored. Students will be challenged to practice proper building site layout, constructing concrete stair and sidewalk forms, and installing the form-a-drain system.

## **CARP 157 (3 credits)** **Floor, Wall, and Ceiling Framing**

With a strong emphasis on platform framing, students will examine and demonstrate the proper methods of constructing subfloors, walls, and ceilings in the framework of residential and light commercial construction. This includes discussing the basic components and construction methods of light-gauge steel framing.

## **CARP 161 (2 credits)** **Stair Construction**

Students learn the different types of stairways and all parts pertaining to them. They also learn how to calculate, lay out, and construct stairway stringers with their proper landings, risers, treads, and railings.

## **CARP 166 (3 credits)** **Roof Framing and Materials**

The different types of roof systems and all the material members that are involved in the different roof types are discussed. Students learn theoretically how to calculate rafters to fit their proper situations and practice laying out and cutting common and hip rafters.

## **CARP 177 (3 credits)** **Exterior and Interior Finish**

In this course, students will study and practice installing various types of exterior and interior finish material for residential construction. For exterior finish, we will give special attention to the proper installation procedures for: roofing; siding; soffit; windows and doors; and aluminum trim. For interior finish, strong emphasis will be placed on proper techniques for: hanging drywall; installing prehung doors and door trim; applying trim around a window unit; and other common trim materials.

## **CARP 182 (3 credits)** **Construction Drawing and Blueprint Reading**

In this course students will learn the proper techniques necessary to dissect a set of residential blueprints and develop a broad understanding of the language of construction drawings. We will also become involved in duplicating, through the process of mechanical architectural drafting, a few select detailed residential section drawings, with each having different drafting scales.

## **CARP 207 (2 credits)** **Floor Construction**

Covers both dimensional and engineered lumber applications. To meet current building designs and codes, students perform installation from a detailed blueprint for sill plates, joists, joist hangers, stair beams, sub flooring, and stair stringer construction.

## **CARP 209 (3 credits)** **Wall Construction**

Covers both dimensional and engineered lumber applications. To meet current building designs and codes, students perform installation and layout from a detailed blueprint for wall plates, stud size and spacing, header design and size, and rough opening sizes for window and door schedules.

## **CARP 218 (3 credits)** **Roof Construction**

Covers engineered trusses and hand-framed rafters with ceiling joists. The students become familiar with the installation and design criteria of an engineered truss including detailed truss drawings for field applications and the codes applying to field modifications. Students perform layout, cutting, and installing roof rafters from a detailed blueprint including proper ceiling joists, collar ties, and gable overhang construction and codes. Students install roof sheeting and fascia boards.



**CARP 219 (1 credit)**  
**Thermal Insulation**

Covers the various types of insulation for thermal, noise, and fire protection. Ventilation baffles, vapor barriers, and types of loose fill insulation are detailed. Students perform installation of insulation for wall, ceiling, and fire-stop applications.

**CARP 222 (2 credits)**  
**Exterior Finish and Trim**

Covers the exterior materials used for siding, roofing, flashing, and aluminum trim. Using accepted methods, students perform siding, soffit, fascia, and fiberglass shingle applications, including proper flashing and counter flashing techniques.

**CARP 226 (1 credit)**  
**Drywall Installation and Finish**

Covers the types and sizes of drywall installed in construction, as well as proper hanging and finishing. Site techniques are covered. Students perform installation and finishing methods for standard applications.

**CARP 257 (2 credits)**  
**Stair Trim**

Covers the variety and designs of interior custom stair trim. Students are instructed in the different stair designs, building codes and the perspective trim applications. Students install custom stair trim for an open stair and box stair designs including over the tread skirt board applications.

**CARP 267 (3 credits)**  
**Interior Finish and Trim**

Covers the various interior painting and staining finishes. The proper wood types and species, finishing methods, and applications are detailed. Details of interior pre-hung doors, window trim including extension jambs and sills are covered. Students perform the installation of a standard trim package.

**CARP 272 (2 credits)**  
**Site Work and Foundations II**

Covers the details associated with site preparation and foundation inspections for a new building. Specifics are for lot size, set back, right of way, and building location. Work includes using various instruments for batter board installations, excavation of foundation, locating footer elevation, and forming and pouring footers. Locating, forming, and pouring of sidewalks and exterior porches.

**CARP 276 (3 credits)**  
**Residential Remodeling**

Covers the details and techniques used for residential remodeling and restoration. Students perform demolition, and repair and update existing structures to current building codes. The topics covered can include kitchens, bathrooms, flooring and exterior finishes.



# collision repair technology

Students will be instructed in a series of I-CAR courses in Non-Structural ProLevel 1 and Refinishing ProLevel 1, the industry standard for collision repair training. Students graduate with a variety of nationally recognized Platinum certificates from I-CAR. This program aligns with collision repair businesses needing to hire employees to maintain or become I-CAR Gold Class Professionals. This program makes students proficient at entry-level tasks. Students also have the opportunity to become certified as ASE Master Technicians. The Collision Technology Repair program is dedicated to providing the most current and complete information, knowledge and skills required to perform complete, safe and quality repairs. Thaddeus Stevens College of Technology provides you with comprehensive training and industry recognized credentials for a successful career in collision repair.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Use collision repair tools and equipment safely and effectively.
- Analyze the structural design of a vehicle and its reaction to an impact.
- Repair damaged metal.
- Refinish vehicles.
- Install panels.
- Repair frame damage.

**Dennis Antosy, Assistant Professor**

AAS: Thaddeus Stevens College of Technology  
I-CAR Certified Instructor  
I-CAR Certified-Platinum Level  
ASE Certified Master Technician  
Motor Vehicle Damage Appraiser

**David Lightner, Instructor**

AAS: Thaddeus Stevens College of Technology  
PPG Certified Refinish Technician  
I-CAR Certified Refinisher  
I-CAR Certified Prefinish Prep and Masking



**MODEL SCHEDULE FOR  
COLLISION REPAIR TECHNOLOGY**

**SEMESTER 1**

CORT 107 Details of Body Construction	4
CORT 111 Collision Repair Welding	4
CORT 116 Repairing Damaged Panels & Metalworking	4
ENG 106 Composition I	3
MATH 126 Technical Mathematics I	3

**SEMESTER 2**

CORT 156 Introduction to Refinishing Procedures	4
CORT 162 Panel Replacement, Adjustment, Corr. Protection	4
CORT 166 Introduction to Frame Alignment and Repair	4
CIS 111 Intro to Computer Applications	3
ENG 216 Technical Report Writing	3

**SEMESTER 3**

CORT 212 Estimating Technology	4
CORT 222 Aluminum Technology	4
CORT 232 Non-Structural Technology	4
MATH 111 Business Math	3
BUSN 106 Small Business Management	3

**SEMESTER 4**

CORT 252 Structural Technology	4
CORT 262 Refinishing Technology	4
CORT 272 Mechanical Technology	4
Science Elective	3
Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
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**TOTAL CREDITS** **73**



# collision repair technology (CORT)

## **CORT 107 (4 credit)** **Details of Body Construction**

Different types of automobile bodies and how they are made at the factory. The locations of body joints and parts and the proper methods for parts removal and replacement are also covered.

## **CORT 111 (4 credits)** **Collision Repair Welding**

Designed to prepare students in the use of a MIG welder and the various uses of oxyacetylene equipment for cutting and heating to normalize and shrink metal. Proper use of equipment is stressed.

*Prerequisite: CORT 107*

## **CORT 116 (4 credits)** **Repairing Damaged Panels and Metalworking Methods**

Use of proper tools and techniques to bend sheet metal. Direct and indirect damage are explained along with ways damage can be corrected.

*Prerequisite: CORT 111*

## **CORT 156 (4 credits)** **Introduction to Refinishing Procedures**

Refinishing and the use of tools operated by compressed air. Proper use of various finish materials: primers, sealers, and thinners. Masking and spray painting techniques are also covered.

*Prerequisite: CORT 116*

## **CORT 162 (4 credit)** **Panel Replacement, Adjustment, and Corrosion Protection**

Proper removal and replacement of panels are stressed as well as the proper alignment of panels. A general overview of determining repair procedures, inspecting areas for hidden damage, removal of damaged panels, and corrosion protection.

*Prerequisite: CORT 156*

## **CORT 166 (4 credits)** **Introduction to Frame Alignment and Repair**

Frame alignment and straightening is studied, including the use of gauges and frame straightening equipment needed to restore a damaged frame or body to factory specifications.

*Prerequisite: CORT 162*

## **CORT 212 (4 Credits)** **Estimating Technology**

Estimators inspect and analyze collision-damaged vehicles to create a repair plan. The technician builds relationships with vehicle owners, repairers, and insurance personnel, and also insures satisfaction when repairs are complete.

*Prerequisite: CORT 166*

## **CORT 222 (4 Credits)** **Aluminum Technology**

An aluminum structural technician restores aluminum structural dimensions and structural integrity to collision damaged vehicles. He or she uses measuring and frame equipment to diagnose, damage, and return damaged frame or uni-body parts to manufacturer's specifications.

*Prerequisite: CORT 212*

## **CORT 232 (4 Credits)** **Non-Structural Technology**

Non-structural technicians restore damaged vehicles to their original structural integrity, function, and appearance. These technicians use hand tools and power tools to remove or repair damaged parts, weld as needed, and properly install new parts. They work with a variety of metals and plastics, as well as glass, electrical, and mechanical parts.

*Prerequisite: CORT 222*

## **CORT 252 (4 Credits)** **Steel Structural Technology**

Steel structural technicians restore structural dimensions and integrity to collision damaged vehicles. Technicians use measuring and framing equipment to diagnose damage and return damaged frame or uni-body parts to manufacturer's specifications. Hand tools and power tools are used to remove or repair damaged parts, weld as needed, and properly install new parts. This individual also works with a variety of metals and plastics, as well as glass, electrical, and mechanical parts.

*Prerequisite: CORT 232*

## **CORT 262 (4 Credits)** **Refinishing Technology**

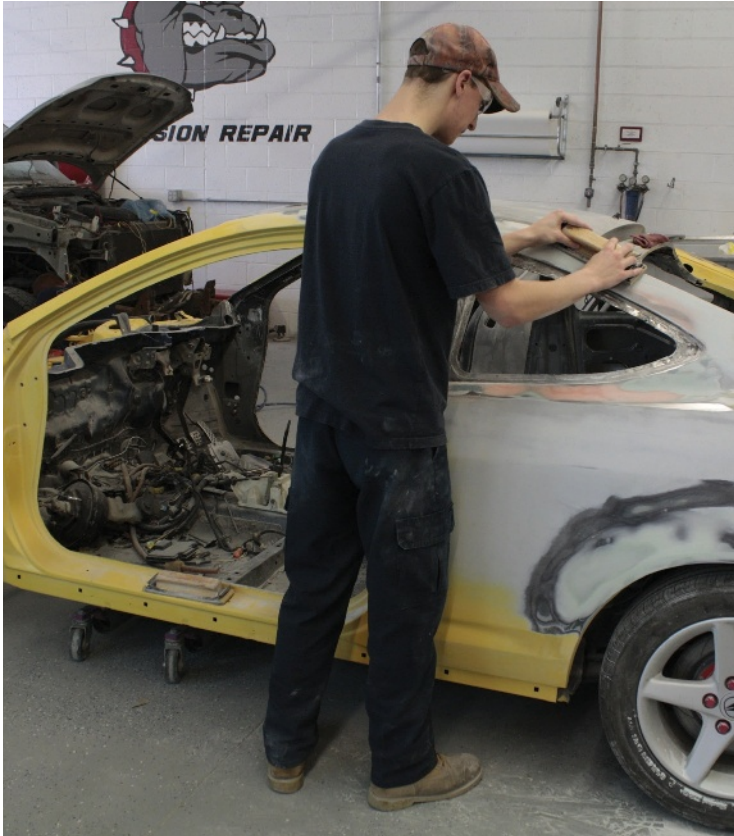
Refinish technicians prepare and apply paint to repaired vehicles. Duties may include final sanding, masking, color mixing and tinting, spray booth operations, applying primers, sealers, color, and clear coats. They may need to blend color into adjacent panels for a better color match to existing vehicle paint. These individuals work with potentially hazardous materials, so attention to safety and personal protection are essential. Vehicles must be correctly prepared and refinished to ensure proper adhesion, color match, and overall appearance.

*Prerequisite: CORT 252*

## **CORT 272 (4 Credits)** **Mechanical Technology**

The Mechanical Technician diagnoses and repairs collision-related mechanical damage which includes steering and suspension systems. Hand tools and power tools are used to remove or repair damaged parts and properly install new and used parts.

*Prerequisite: CORT 262*



# computer & network systems administration

The Computer and Network Systems Administration program prepares students for employment in a wide variety of positions in the information technology field. Students work in a "live" network environment, managing their own servers, clients, routers, and switches by applying concepts learned in the theory classroom. The combination of theory and hands-on lab exercises allows CNSA students to acquire comprehensive skills in the following technical areas: The internal operation of personal and server computer systems; the physical infrastructure of local and wide area networks; the design and management of computer networks; the administration of Microsoft Windows and non-Windows server and client operating systems; the design and development of Windows-based and web-based applications; the management and design of relational databases; and the integration of enterprise software applications to solve business problems.

Upon completion of the program, graduates of the CNSA program have obtained employment in information technology as systems administrators, network administrators, network technicians, PC technicians, help desk analysts, systems engineers, structured data cabling installers, application programmers, web application developers, web administrators, database administrators, and sales engineers. High school prerequisites for this program are Algebra I & II, and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Solve business problems by applying sound information technology principles.
- Implement and administer a broad range of information technology systems, networks, and applications.
- Manage information technology projects from conceptualization through implementation.
- Make significant contributions as a member of an information technology team.
- Explain with authority current technologies and standards in the field.
- Maintain information technology skills through appropriate industry certifications and/or continuing education.
- Demonstrate a strong professional work ethic.
- Protect and preserve a business organization's critical information assets from all threats.





**Kevin Flory, Associate Professor**

BS: Albright College  
AST: Thaddeus Stevens College of Technology

**Tim Headings, Instructor**

BS: Albright College  
AAS: Thaddeus Stevens

**Dr. Jameson McFarlane, Professor**

D.Sc., Towson University  
MBA, BSc: York College of Pennsylvania  
Certificate in Music Theory: St. Lucia School of Music  
Certificate in Teacher Ed. and Ed. Adm.: Sir Arthur Lewis  
Community College/University of the West Indies

**MODEL SCHEDULE FOR  
COMPUTER & NETWORK SYSTEMS ADMINISTRATION  
(OPTION #1)**

**SEMESTER 1**

CNSA 107 PC Hardware and Support Fundamentals	3
CNSA 111 Intro to Networking	3
CNSA 117 Analysis of TCP/IP & Local Area Networking	3
CNSA 123 LAN Cabling and WAN Technologies	3
ENG 106 English Composition	3
MATH 137 Intermediate Algebra	3

**SEMESTER 2**

CNSA 156 Operating Systems I	3
CNSA 161 Systems Administration I	3
CNSA 166 Internetworking Devices and Concepts	3
CNSA 172 Web Technologies and Network Security Fund	3
MATH 141 Trigonometry	3
ENG 216 Technical Report Writing	3

**SEMESTER 3**

CNSA 212 Programming I	3
CNSA 222 Database Management Systems	3
CNSA 227 Management Information Systems	3
CNSA 256 Operating Systems II	3
ELECTIVE General Elective	3
ENG 221 Public Speaking	3

**SEMESTER 4**

CNSA 216 Web Programming	3
CNSA 266 Systems Administration II	3
CNSA 271 Network Design	3
CNSA 276 Practical Applications	3
PHYS 106 Physics in Everyday life (or Higher)	3
HUMANITIES Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
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**TOTAL CREDITS** **73**

**MODEL SCHEDULE FOR  
COMPUTER & NETWORK SYSTEMS ADMINISTRATION  
(OPTION #2)**

**SEMESTER 1**

CNSA 107 PC Hardware and Support Fundamentals	3
CNSA 111 Intro to Networking	3
CNSA 117 Analysis of TCP/IP & Local Area Networking	3
CNSA 123 LAN Cabling and WAN Technologies	3
ENG 106 English Composition	3
Math 207 Pre-Calculus	4

**SEMESTER 2**

CNSA 156 Operating Systems I	3
CNSA 161 Systems Administration I	3
CNSA 166 Internetworking Devices and Concepts	3
CNSA 172 Web Technologies and Network Security Fund	3
ENG 216 Technical Report Writing	3

**SEMESTER 3**

CNSA 212 Programming I	3
CNSA 222 Database Management Systems	3
CNSA 227 Management Information Systems	3
CNSA 256 Operating Systems II	3
ENG 221 Public Speaking	3

**SEMESTER 4**

CNSA 216 Web Programming	3
CNSA 266 Systems Administration II	3
CNSA 271 Network Design	3
CNSA 276 Practical Applications	3
PHYS 106 Physics in Everyday life (or Higher)	3
HUMANITIES Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

ELECTIVE General Elective	3
HEAL Elective HEAL 106 or HEAL 111	1

**TOTAL CREDITS** **74**

# computer and network systems administration (CNSA)

## **CNSA 107 (3 Credits)** **PC Hardware and Support Fundamentals**

This course is focused on the internal components and operation of digital devices with emphasis on desktop PC systems used for business. Processors, memory, hard drives, SSDs, communication buses, and other components are covered. Electricity fundamentals and the binary numbering system are also a part of this course. Students build a computer from scratch in the lab.

## **CNSA 111 (3 Credits)** **Introduction to Networking**

Provides an overview of modern networking arrangements and goes into detail about the digitization of analog signals, the OSI model, the Ethernet protocol, and Ethernet switching. IP addresses and IP sub-netting are also covered in depth.

*Prerequisite: CNSA 107*

## **CNSA 117 (3 Credits)** **Analysis of TCP/IP and Local Area Networking**

The TCP/IP protocol suite is explored in detail. Topics include ARP, ICMP, DNS, DHCP, IPv4, IPv6, and TCP operation details such as sequencing, acknowledgments, and sliding window flow control. After lecture is complete, students spend lab time capturing frames with a software protocol analyzer and verifying the behaviors they learned about in lecture. Wireless networking (WiFi) is also a part of this course.

*Prerequisite: CNSA 111*

## **CNSA 123 (3 Credits)** **LAN Cabling and WAN Technologies**

Cabling standards and best cabling practices in the industry are covered. Students practice hands-on cable termination of copper and fiber cables in the lab. This course also provides an overview of telecommunications technologies and the use of telecommunications in wide area networks (WANs).

*Prerequisite: CNSA 117*

## **CNSA 156 (3 Credits)** **Operating Systems I**

Microsoft's server operating systems are a dominant network operating system in the information technology industry. In this course, along with CNSA 161, students get detailed lecture about and hands-on experience with Microsoft's server operating system. Practical hands-on experience is included in the labs and begins with attended and unattended installation methods. Included in installation methods are imaging and cloning techniques for mass rollouts of server and client operating systems. The lecture and labs continue with configuration of file and print servers, securing files with share and NTFS permissions, disk management (including RAID), disaster recovery, and backup methods.

*Prerequisite: CNSA 123*

## **CNSA 161 (3 Credits)** **Systems Administration I**

This course continues where CNSA 156 leaves off. In this course, students learn about Microsoft's Active Directory structure and management. User account maintenance, user profiles, logon scripts and group policy are covered. Students also learn in the classroom what goes on behind the scenes with dynamic host control protocol (DHCP or automatic addressing) and domain name server (DNS or computer name resolution). Ultimately, students take this classroom theory and apply it in the lab as they create their own active directory domains and configure DHCP and DNS services within their domain.

*Prerequisite: CNSA 156*

## **CNSA 166 (3 Credits)** **Internetworking Devices and Concepts**

This is a Cisco-centric course on IP routing and switching. Traditional routers and L3 switches are discussed in the classroom and used in the lab. Routing protocols such as RIPv2, EIGRP, and OSPF are covered. In addition to routing, voice-over IP (VoIP) is a significant technology that businesses implement in order to reduce cost and leverage investments in the data network. For that reason, this course provides an overview of VoIP and assigns a lab project to configure a software private branch exchange (PBX) telephone switch that is capable of routing phone calls within the lab environment.

*Prerequisite: CNSA 161*

## **CNSA 172 (3 Credits)** **Web Technologies and Network Security Fundamentals**

Students learn how to configure a web server that can host multiple websites. The course then moves into the creation of web pages from scratch using HTML, CSS, and a text editor. Since security has become an increasingly important issue in our times, some of the security measures that are commonly used on the Internet are included in this course. These security measures include an overview of threats and defense strategies, the public key infrastructure (PKI), digital certificates, hash codes, and digital signatures.

*Prerequisite: CNSA 166*

## **CNSA 212 (3 Credits)** **Programming I**

An introduction to the fundamentals of computer programming. Students learn a structured, object-oriented approach to problem solving and automating routine processes using modern programming languages. The programming concepts used emphasize logical thinking and current programming standards and conventions. Students learn to plan, design, compile, debug, and document applications in a visual programming environment using a programming language that is compatible with the Microsoft .NET Framework. In addition, the course introduces the integration of programming applications with databases as well as next generation programming environments.

*Prerequisites: CNSA 156 and CNSA 161*

**CNSA 216 (3 Credits)**  
**Web Programming**

A course that builds upon the information learned in CNSA 172, CNSA 212, CNSA 222, it introduces advanced web programming and development techniques and tools. The primary focus of the course is on the design of dynamic, interactive websites, using current web programming languages and tools, including the technology of the Microsoft .NET Framework. Students integrate the use of relational databases to provide data storage and retrieval for their interactive websites. Students also configure and manage web servers to support interactive web pages.

*Prerequisites: CNSA 172, CNSA 212, and CNSA 222*

**CNSA 222 (3 Credits)**  
**Database Management Systems**

An in-depth, hands-on survey course in which students develop the skills and the expertise required to design, implement, and manage databases using a relational database management system (RDBMS). Students learn concepts of the relational database model, the principles of database design and normalization, and database administration. In addition, the basic commands and functions of structured query language (SQL) are used for data manipulation and extraction, as well as for database administration. Finally, topics are introduced that relate enterprise databases to client/server systems, application programming, web database development, and e-commerce.

*Prerequisite: CNSA sophomore standing*

**CNSA 227 (3 Credits)**  
**Management Information Systems**

A course that introduces students to the policies and procedures required to administer an enterprise computer network and to support an effective information technology department and users in the enterprise. Students learn how to prepare and maintain documentation for information technology systems, software, processes, and projects. The skills learned in this course are integrated into the other CNSA courses throughout the sophomore year. An important component of the course is research, readings, and discussion related to ethical practices in the field of information technology.

*Prerequisite: CNSA sophomore standing*

**CNSA 256 (3 Credits)**  
**Operating Systems II**

The second operating systems course in the CNSA curriculum that introduces students to the design, functionality, and administration of the predominant non-Windows operating system in the current computer industry. At this particular time, the course presents an in-depth examination of Linux, focusing on the proper installation and administration of the operating system. Students explore the wealth of support sites available to administrators of Linux systems, as well as the availability of productivity software applications and system administration tools for Linux systems.

*Prerequisite: CNSA 156*

**CNSA 266 (3 Credits)**  
**Systems Administration II**

Students will also learn to implement dynamic web sites using PHP HyperText Preprocessor (PHP) and MySQL. Topics include configuring PHP and MySQL, reading HTML forms, variables and strings, selections, loops, arrays, cookies and sessions, functions, regular expressions, connecting to a MySQL database, writing basic Structured Query Language (SQL) commands, developing applications with PHP/MySQL, and configuring Apache server to work in conjunction with Internet Information Services (IIS) for website security.

*Prerequisite: CNSA 161, CNSA 256*

**CNSA 271 (3 Credits)**  
**Network Design**

This is the first of two capstone courses in the CNSA curriculum that requires students to rely heavily upon the knowledge and skills acquired from their entire previous course experiences. Project teams manage all accounts (i.e., user, group, computer, security) in their respective domains. In designing their enterprise domains, the teams conduct appropriate research, analyze and evaluate enterprise requirements and specifications, and document the network design. Knowledge of the fundamentals of networking technology, experience supporting a network, or successful completion of a networking essentials course is required.

*Prerequisite: CNSA 266*

**CNSA 276 (3 Credits)**  
**Practical Applications**

The second of two capstone courses in the CNSA curriculum that requires students to rely heavily upon the knowledge and skills acquired from their entire previous CNSA course experiences. This course also includes in-depth research and examination of selected network applications and the implementation of those applications in the enterprise. Students learn how to plan, configure, and administer the specified application(s), implement the application(s), document the installation(s), and train the appropriate users to use and administer the application(s).

*Prerequisites: CNSA 266 and CNSA 271*



# computer software engineering technology

Computers have become a major factor in the development and operation of the modern industry. From providing means of communications, to operating machines, to facilitating international commerce, to systems animation, computers and their related software programs makes things possible.

The Computer Software Engineering Technology program prepares students to design, develop, and build customized software programs for specific applications. Specifically, students will learn basic programming, how to interpret specifications, application of software architecture, verification and validation principles, and software performance standards. Students will create software programs which address known specifications. The program emphasizes a practical hands-on education as software projects are required each semester.

Upon completion of the program, graduates will find a wealth of employment opportunities in a variety of businesses and industries. Unlike some disciplines which are tied directly to a specific technical area, graduates of this program will work in small businesses, large industries, private organizations, software specialty businesses, IT Department, Government, and other agencies. Job titles might include:

- Software Designers
- Software Test Technicians
- Software Maintenance Technicians
- Technical Writer for Software Publishing Companies
- Customer Service Technicians for Software Companies

## PROGRAM OBJECTIVES

A graduate of this program will be able to do the following::

- Edit and modify existing software programs with the aim of upgrading and correcting errors.
- Improve the performance of software programs, or adapt it to new and old hardware and software.
- Analyze the needs of users for project design.
- Design and modify software systems for specific applications
- Analyze and recommend all necessary system layouts and modifications.
- Train users how to make use of new software.



**MODEL SCHEDULE FOR  
COMPUTER SOFTWARE ENGINEERING TECHNOLOGY**

**SEMESTER 1**

CSET 105 Intro to Web Applications	3
CSET 110 Web Development I	3
CSET 115 Technical Requirements & Data Structures	3
CSET 120 Software Project I	3
MATH 137 Intermediate Algebra(or higher)	3
ENG 106 English Composition	3

**SEMESTER 2**

CSET 155 Database Design	3
CSET 160 Web Development II	3
CSET 170 Security & Professional Ethics OR	3
CNSA 172 Web Technologies & Network Security Fund	3
CSET 180 Software Project II	3
CIS 111 Introduction to Computer Applications	3
BUSN 106 Small Business Management	3

**SEMESTER 3**

CSET 205 Advanced Data Integration OR	3
CNSA 222 Database Management Systems	3
CSET 210 Workplace Communications	2
CSET 220 Software Project III	3
PHYS 106 Physics for Everyday Life (OR any CHEM, BIO, SCI, or Higher PHYS)	3
ENG 221 Public Speaking	3
ENG 216 Technical Report Writing	3

**SEMESTER 4**

TECH 104 Internship	4
CSET 260 Software Principles	3
ADVANCED ELECTIVES(Select One)	
CNSA 266 Systems Administration II	3
CNSA 271 Network Design or other	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL 106 Fitness and Wellness	1
Humanities Elective	3

<b>TOTAL CREDITS</b>	<b>73</b>
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# computer software engineering technology (CSET)

## **CSET 105 (3 Credits)** **Introduction to Web Applications**

The course provides an introduction to the basic tools, processes, and workflow in the development of web applications. Students will cover version control, using the command line, and an introduction to automated testing during development. The course meets during the first twelve weeks of the semester.

## **CSET 110 (3 Credits)** **Web Development I**

The course introduces front end web development concepts including HTML, CSS, and Javascript, and their role in building web applications. The course meets during the first twelve weeks of the semester.

## **CSET 115 (3 Credits)** **Technical Requirements and Data Structures**

The course provides information regarding the process of disseminating specifications and managing a project, as well as data structures concepts. The course meets during the first twelve weeks of the semester.

## **CSET 120 (3 Credits)** **Software Project I**

This course requires the student to complete a computer software project that employs the skills acquired during that semester. Scheduled during the last three weeks of the semester, the specific projects are those suggested by local employers and advisory committee members. Optional challenge projects are available for those students who wish to tackle complex problems.

*Prerequisite: CSET 105, CSET 110 & CSET 115*

## **CSET 155 (3 Credits)** **Database Design**

The course develops skills in the administration of databases. Students learn to organize data, and to store the data for use and retrieval. Common systems of data storage are introduced. Students will build a database, script a process to load data, and outline how to retrieve data from that database. The course meets during the first twelve weeks of the semester.

*Prerequisite: CSET 110 & CSET 115*

## **CSET 160 (3 Credits)** **Web Development II**

Students will look at server-side development and build more complex web applications using their knowledge gained in CSET 110 (Web Development I). Students will have the option to choose between PHP and Ruby as their development language for labs and projects in this course. The course meets during the first twelve weeks of the semester.

*Prerequisite: CSET 110 & CSET 120*

## **CSET 170 (3 Credits)** **Security and Professional Ethics**

The course explores issues of security in software development. Students analyze security problems and learn how they can be minimized or controlled. Students will also cover Secure Socket Layer (SSL) protocol and learn how to apply it to their web applications. The course meets during the first twelve weeks of the semester.

*Prerequisite: CSET 110 & CSET 115*

## **CNSA 172 (3 Credits)** **Web Technologies and Network Security Fundamentals**

Students learn how to configure a web server that can host multiple websites. The course then moves into the creation of web pages from scratch using HTML, CSS, and a text editor. Since security has become an increasingly important issue in our times, some of the security measures that are commonly used on the Internet are included in this course. These security measures include an overview of threats and defense strategies, the public key infrastructure (PKI), digital certificates, hash codes, and digital signatures.

## **CSET 180 (3 Credits)** **Software Project II**

This course requires the student to complete a computer software project that employs the skills acquired during that semester and previous semesters. Scheduled during the last three weeks of the semester, the specific projects are those suggested by local employers and advisory committee members. Optional challenge projects are available for those students who wish to tackle complex problems.

*Prerequisite: CSET 120, CSET 155, CSET 160 & CSET 170*

## **CSET 205 (3 Credits)** **Advanced Data Integration**

The course is an extension to more complex data operations skills. Students will learn the principles of creating APIs, explore methods of data analysis, and integrate their applications with external platforms like Open Earth and Twitter. The course meets 16 weeks during the semester (including final exams).

*Prerequisite: CSET 155, CSET 160 & CSET 170*



**CNSA 222 (3 Credits)**  
**Database Management Systems**

An in-depth, hands-on survey course in which students develop the skills and the expertise required to design, implement, and manage databases using a relational database management system (RDBMS). Students learn concepts of the relational database model, the principles of database design and normalization, and database administration. In addition, the basic commands and functions of structured query language (SQL) are used for data manipulation and extraction, as well as for database administration. Finally, topics are introduced that relate enterprise databases to client/server systems, application programming, web database development, and e-commerce.

**CSET 210 (2 Credits)**  
**Workplace Communications**

Students will learn the skills associated with good communications in the workplace. Students will learn the skills necessary to be a good team member. Tenets of customer interaction will also be emphasized. The course meets 16 weeks during the semester (including final exams).  
*Prerequisite: BUSN 106 & CSET 170*

**CSET 220 (3 Credits)**  
**Software Project III**

This course requires the student to complete a computer software project that employs the skills acquired during that semester and previous semesters. The specific projects are those suggested by local employers and advisory committee members. Optional challenge projects are available for those students who wish to tackle complex problems. The course meets 16 weeks during the semester (including final exams).  
*Corequisite: CSET 205 & CSET 210*

**TECH 104 (4 credits)**  
**Special Topics (Internship)**

Special topics are selected. The topic to be studied is determined by the instructor and approved by the vice president for academic affairs. Credits earned are applicable either as free electives in the program or as credits used for graduation (with the approval of the vice president for academic affairs.)

**CSET 260 (3 Credits)**  
**Software Principles**

Students will be introduced to the most fundamental concepts and principles of software that have been used in practical means throughout this program. Course may cover topics including operating systems, object oriented principles, software design patterns, and system architecture. The course meets 16 weeks (including final exams). The course meets 16 weeks during the semester (including final exams).

*Prerequisite: CSET 205 & CSET 210*

**CNSA 266 (3 Credits)**  
**Systems Administration II**

Students will also learn to implement dynamic web sites using PHP HyperText Preprocessor (PHP) and MySQL. Topics include configuring PHP and MySQL, reading HTML forms, variables and strings, selections, loops, arrays, cookies and sessions, functions, regular expressions, connecting to a MySQL database, writing basic Structured Query Language (SQL) commands, developing applications with PHP/MySQL, and configuring Apache server to work in conjunction with Internet Information Services (IIS) for website security.

**CNSA 271 (3 Credits)**  
**Network Design**

This is the first of two capstone courses in the CNSA curriculum that requires students to rely heavily upon the knowledge and skills acquired from their entire previous course experiences. Project teams manage all accounts (i.e., user, group, computer, security) in their respective domains. In designing their enterprise domains, the teams conduct appropriate research, analyze and evaluate enterprise requirements and specifications, and document the network design. Knowledge of the fundamentals of networking technology, experience supporting a network, or successful completion of a networking essentials course is required.

# electrical technology

Electrical Technology provides the opportunity to acquire the theory and skills needed to gain entry-level employment and advancement at an accelerated pace in the electrical field. Students will be able to apply basic electrical theory to all aspects of electrical technology. Skills and safe working habits are developed through construction and maintenance work project assignments. Since electricity has become an integral part of everyday life, an adequate supply of electrical power is necessary, as well as a reliable system for efficient utilization; thus, there is a continuing need for qualified electrical technicians.

Graduates' knowledge and skills are useful in such career areas as electrical engineering technicians, power plant technicians, electrical construction, industrial maintenance, and as technical representatives. High school prerequisites for this program are Algebra I & II, and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate technical skills in a variety of electrical fields, apply these skills to new developments in these

fields, and apply accepted safety standards.

- Demonstrate the ability to design, develop, and analyze electrical circuits and systems.
- Complete parts lists and order forms that demonstrate knowledge of catalogs and of coding and numbering systems for devices, hardware, and materials.
- Interpret and develop blueprints, schematic diagrams, and wiring plans and transform them into functioning projects that conform to the National Electrical Code and/or other specifications.
- Evaluate electrical circuits and systems and communicate the results of such evaluations verbally or in writing.
- Demonstrate basic knowledge of construction procedures and electrical wiring techniques.
- Demonstrate knowledge of the use of test equipment and the electrical theory used in troubleshooting, repair, and operation of circuits, systems, and equipment.
- Demonstrate knowledge of the theory and mechanics of rotating machinery, programmable controllers, transformers, and instrumentation.
- Demonstrate leadership skills.

**Frederick F. Bube, Instructor**

BS: The Pennsylvania State University  
Occupational Safety and Health Administration (OSHA)  
General Industry Certification Trainer

**Brian J. Kochan, Instructor**

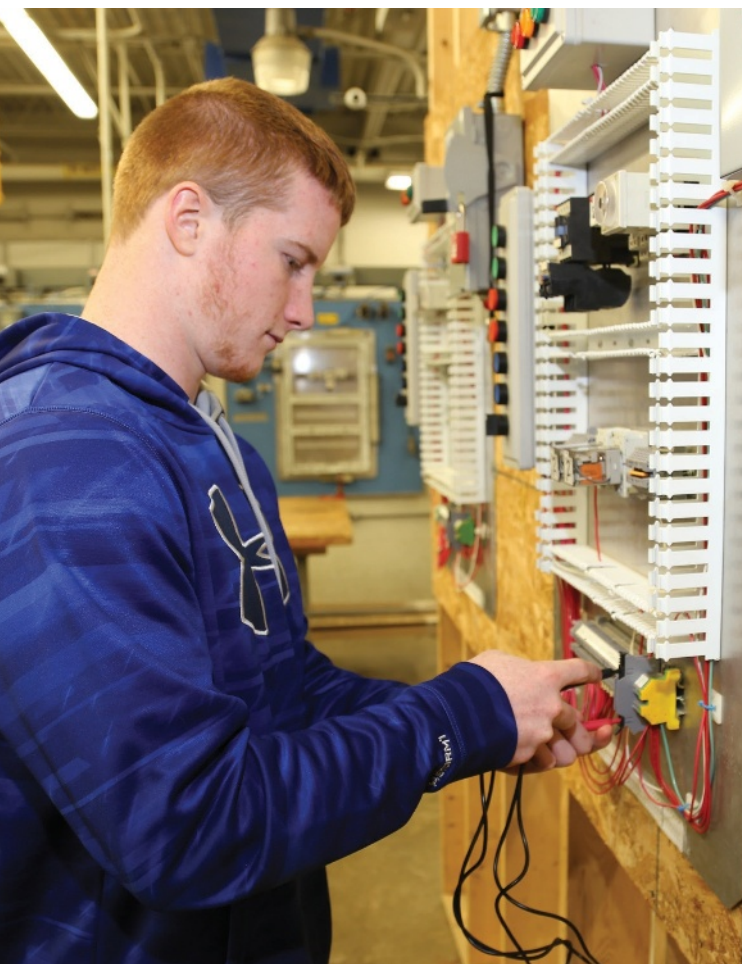
MA: University of Maine  
BS: Millersville University  
AAS: Thaddeus Stevens College of Technology

**Andrew Jacobs, Instructor**

MEd: Temple University  
BS: The Pennsylvania State University  
Electrical Apprenticeship Program: IBEW,  
Local 98 Philadelphia  
Secondary School Counselor: Immaculata University  
Occupational Safety and Health Administration (OSHA) 10  
Trainer, WVU  
NABCEP Entry Level Solar PV Installer Certification  
Program Instructor

**Jon Kramer, Associate Professor**

MEd: Alvernia College  
BS: Temple University, Summa Cum Laude  
AAS: Thaddeus Stevens College of Technology  
Electrical Apprenticeship: International Brotherhood of  
Electrical Workers, Local Union 743  
Vocational Instruction Teaching Certification II  
Kappa Delta Phi Honor Society, Temple University  
National Society of Collegiate Scholars, Temple University  
IAEI Certified Electrical Inspector  
Approved Occupational Safety and Health Administration  
(OSHA) General Industry Certification Trainer



## MODEL SCHEDULE FOR ELECTRICAL TECHNOLOGY

**SEMESTER 1**

ELEC 107 Theory and Analysis Lab I	1
ELEC 113 Theory and Analysis I	4
ELEC 117 Practicum	4
ELEC 120 Systems Design I	3
MATH 137 Intermediate Algebra	3
ENG 106 Composition I	3

**SEMESTER 2**

ELEC 126 Systems Design II	3
ELEC 157 Theory and Analysis lab II	1
ELEC 162 Theory and Analysis II	4
ELEC 168 Practicum II	4
MATH 141 Trigonometry	3
ENG 216 Technical Writing	3

**SEMESTER 3**

ELEC 211 Industrial Electronics	4
ELEC 216 D.C. & A.C. Motors and Generators	4
ELEC 257 Industrial Motor Control	4
PHYS 213 General Physics I	4
CIS 111 Intro to Computer Applications	3

**SEMESTER 4**

ELEC 206 Industrial Electricity	4
ELEC 263 Advanced Industrial Motor & Drive Control	4
ELEC 267 Programmable Logic Controllers	4
Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE General Education Elective	3

**TOTAL CREDITS** **74**



# electrical technology (ELEC)

## **ELEC 107 (1 credits)**

### **Electricity I: Theory and Analysis Lab**

Laboratory assignments enable students to demonstrate the theoretical topics covered in ELEC 113. Lab sessions train students to properly connect electrical circuitry and utilize appropriate metering instruments to take specific measurements to determine voltage, resistance, current, and power, and to troubleshoot various circuit layouts.

*Co-requisite: ELEC 113*

## **ELEC 113 (4 credits)**

### **Electricity I: Theory and Analysis**

This course presents principles, laws, and formulas relating to basic direct current (DC) and alternating current (AC) applications in electricity. Topics include electron theory, magnetism, DC power supplies, Ohm's Law, Kirchhoff's Laws, AC waveform analysis and basic motor design. Resistive and inductive loads and various electrical circuit layouts are analyzed.

*Co-requisite: ELEC 107*

## **ELEC 117 (4 credits)**

### **Electricity I: Practicum**

Workshop projects enable students to develop an understanding of fundamental residential and preliminary commercial circuit design and installations, in accordance with the National Electrical Code (NEC) and associated building regulations.

*Co-requisite: ELEC 120*

## **ELEC 120 (3 credits)**

### **Electricity I: Systems Design**

This course is an introduction to fundamental residential and preliminary commercial wiring systems design. Topics include Occupational Safety and Health Administration (OSHA) certification, electrical and on-the-job safety, tool and material familiarization, plan design and specifications, wire diagramming, and the use of applicable National Electrical Code (NEC) standards.

*Co-requisite: ELEC 117*

## **ELEC 126 (3 credits)**

### **Electricity II: Systems Design**

This course is an advanced study in commercial and industrial electrical systems design and installation. Sizing various raceway systems for commercial and industrial applications, custom electrical enclosure sizing, and poly-phase distribution systems are reviewed in detail. Industrial process and motor control material, circuit planning and design, and AC motors sizing and wiring methods introduce students to advanced electrical control systems.

*Prerequisites: ELEC 113, ELEC 117, and ELEC 120*

*Co-requisite: 168*

## **ELEC 157 (1 credit)**

### **Electricity II: Theory and Analysis Lab**

Laboratory assignments enable students to analyze AC waveforms and AC circuit characteristics by connecting the appropriate electrical components and utilizing electrical measuring instruments to take specific measurements. Computer software is used to enable advanced circuit analysis and troubleshooting.

*Prerequisites: ELEC 113, ELEC 117, and ELEC 120*

*Co-requisite: ELEC 162*

## **ELEC 162 (4 credit)**

### **Electricity II: Theory and Analysis**

This course presents advanced study in the principles, laws, and formulas relating to alternating current (AC) applications in electricity. Topics include AC waveform analysis, electromagnetism, power generation and distribution, vector diagrams, power factor and correction, single-phase and poly-phase systems, and motors.

*Prerequisites: ELEC 113, ELEC 117, and ELEC 120*

*Co-requisite: ELEC 157*

## **ELEC 168 (4 credit)**

### **Electricity II: Practicum**

This course is a hands-on approach to commercial and industrial electrical systems design and installation. Assignments include schematic and ladder diagramming, commercial wiring and raceway systems installations, process control wiring, troubleshooting single-phase and poly-phase distribution systems, motors, and motor control circuits.

*Prerequisites: ELEC 113, ELEC 117, and ELEC 120*

*Co-requisite: ELEC 126*

## **ELEC 206 (4 credits)**

### **Industrial Electricity**

Theory is covered and then complemented by utilizing test benches to connect single transformers into 3-phase banks for wye and delta systems. Additional topics include determining size and bend race-ways for industrial loads, as well as becoming familiar with various hazardous areas and their requirements.

*Prerequisites: ELEC 156 and ELEC 161*

## **ELEC 211 (4 credits)**

### **Industrial Electronics**

Theory and practice in basic electronic components, and single- and poly-phase rectifier circuits, including power supplies. Use of thyristors to control the average load current through machinery in industry by changing conducting time. Basics of operational amplifiers and analog and digital transducers are covered.

*Prerequisites: ELEC 126, ELEC 162, and ELEC 168*

**ELEC 216 (4 credits)**  
**DC and AC Motors and Generators**

Theory is complemented by utilizing a Lab-Volt dissectible machine trainer and electric motors, providing hands-on experience in disassembly, reassembly, and testing of DC, and single-phase and three-phase AC motors.

*Prerequisites: ELEC 126, ELEC 162, and ELEC 168*

**ELEC 257 (4 credits)**  
**Industrial Motor Control**

This course presents principles and industry standards relating to the design and installation of basic industrial motor control circuits. Additionally, the theory and operational characteristics of electrical devices utilized in control circuits is covered. Topics include electrical drawings, contactors/motor starters, basic motor control circuits (two-wire/three-wire/reversing), and control devices. A laboratory component provides students with the opportunity to design, install, and operate various motor control schemes/circuits.

*Prerequisites: ELEC 162 and ELEC 168*

**ELEC 263 (4 credits)**  
**Advanced Motor and Drive Controls**

This course presents principles and industry standards relating to the design and installation of advanced industrial motor and drive control circuits. Additionally, the theory and operational characteristics of starting/ stopping and motor speed control are covered. Topics include reduced voltage starting techniques, motor speed control, and AC/DC drive controls. A laboratory component provides students with the opportunity to design, to install, and to operate various motor control schemes/circuits, as well as opportunities to troubleshoot faulted circuits.

*Prerequisites: ELEC 216 and ELEC 257*

**ELEC 267 (4 credits)**  
**Programmable Logic Controllers**

This course presents principles and industry standards relating to the use of PLCs used for the automation of industrial process controls. Additionally, students learn to utilize the proprietary programming software to interact with and program PLCs. Topics include PLC hardware characteristics, Boolean logic, number systems, relay-type, timing, counter and advanced PLC instructions. A laboratory component provides students with the opportunity to design, to install, and to operate various PLC-controlled processes in a simulated and hands-on environment.

*Prerequisites: ELEC 211 and ELEC 257*



# electronic engineering technology

Electronic Engineering Technology provides the opportunity to acquire the skills needed to gain employment as an engineering technician in manufacturing and industry. Skills are developed by theoretical analysis and by the use of manipulative practice in the laboratory. The program gives students a broad theoretical and practical background in analog and digital electronic circuits. Graduates of the Electronic Engineering Technology program are prepared to find employment as technicians with the ability to prototype, to test, to program, to integrate, to install, to maintain, and to repair electronic systems. Because of the use of electronics in most industries, many employment opportunities in varied environments exist. High school prerequisites for this program are Algebra I and II, and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate a working knowledge of DC and AC components and circuits.
- Demonstrate a basic knowledge of solid state devices and circuits.
- Analyze, design, construct, and integrate components and circuits of various types.
- Demonstrate a basic knowledge of digital electronics, logic circuits, microprocessors, and programmable logic controls (PLCs).
- Solve math problems related to circuit analysis, digital electronics, and other systems.
- Operate standard test equipment to analyze electronic systems.
- Design and troubleshoot simple microprocessor-based systems and interface peripheral devices.
- Work with robotics and motion control systems at a basic level.
- Understand pneumatics at a basic level.
- Network PLCs and other data acquisition and control systems.
- Interface sensors and control elements to PLCs.



**Thomas L. Evans, Instructor**  
AAS: Thaddeus Stevens College of Technology

**Bruce C. Schreiner, Professor**  
MEd: The Pennsylvania State University  
BS: Millersville University  
AAS: Thaddeus Stevens College of Technology



## MODEL SCHEDULE FOR ELECTRONIC ENGINEERING TECHNOLOGY

### SEMESTER 1

EET 108 DC Fundamentals(w/lab)	4
EET 118 AC Fundamentals(w/lab)	4
EET 128 Combinational Digital Logic(w/lab)	4
MATH 137 Intermediate Algebra -or-	3
MATH 207 Pre-Calculus	4
ENG 106 Composition I	3

### SEMESTER 2

EET 158 Solid State Devices I(w/lab)	4
EET 168 Solid State Devices II(w/lab)	4
EET 178 Sequential Digital Logic(w/lab)	4
MATH 141 Trigonometry or	3
If Pre-Calculus selected, then ELECTIVE	
ENG 216 Technical Writing	3

### SEMESTER 3

EET 217 Microprocessors/Microcontrollers (w/lab)	4
EET 222 Interfacing &	
Programming Microprocessors (w/lab)	4
EET 238 Interfacing and Basic Control Circuits w/Lab	4
PHYS 213 General Physics I	4
Humanities Elective	3

### SEMESTER 4

EET 258 Automation & Control Systems with	
PLCs I (w/lab)	4
EET 268 Automation & Control Systems with	
PLCs II( w/lab)	4
EET 278 Data Acquisition and Control Project	4

### ADDITIONAL GENERAL EDUCATION REQUIREMENTS

ELECTIVE General Education Elective	3
ELECTIVE General Education Elective	3

**TOTAL CREDITS** **73**

# electronic engineering technology (EET)

## **EET 108 (4 credits)** **DC Fundamentals (w/Lab)**

Voltage, current, resistance, conductance, power, and energy are defined. Ohm's law, Kirchoff's laws, Thevenin, Norton, and Superposition theorems are used to analyze resistive circuits. Components studied include: resistors, potentiometers, bridge circuits, comparators, simple timing circuits, switches, circuit breakers, relays, h-bridges, solenoids, photo-resistors, thermistors, voltage sources, and current sources. Students build simple DC circuits based on concepts and components being studied. Electrical measurements are performed to verify proper circuit operation. Circuit construction and measurement techniques are taught. Students are trained in the use of Digital Multi-meters and DC Power Supplies as test equipment.

## **EET 118 (4 credits)** **AC Fundamentals (w/Lab)**

Waveforms, capacitors, inductors, and transformers are studied. Reactance, impedance, phase angles, and power factor are calculated. Pulse Width Modulation, time constants, and filters, are introduced. Students build simple AC circuits based on concepts and components being studied. Wave parameters, capacitance, inductance, impedance, and phase angles are measured to verify proper circuit operation. Students are trained in the use of signal generators and oscilloscopes as test equipment.

*Prerequisite: EET 108*

## **EET 128 (4 credits)** **Combinational Digital Logic (w/Lab)**

Basic digital electronic concepts are covered including introduction to digital machines, number systems (binary and hexadecimal), binary arithmetic, digital signals and switching, Boolean algebra, logic gates (AND, OR, NAND, NOR, XOR, XNOR), logic gate specifications, and basic combinational logic circuits. Includes an introduction to and programming of programmable logic devices (PLDs). Circuits are built from schematics and test equipment (DVM, logic analyzer, digital signal generator, and circuit simulation software) is used to learn the operation of the circuits.

## **EET 158 (4 credits)** **Solid State Devices I (w/Lab)**

Diodes, Rectifiers, Power Supplies, Regulators, BJT Transistors, and Transistor Amplifiers are studied. Students build and test diode circuits, power supplies, transistor circuits, and amplifiers.

*Prerequisites: EET 108 and EET 118*

## **EET 168 (4 credits)** **Solid State Devices II (w/Lab)**

FET transistors, Op Amps, Thyristors, Opto-isolators, and Solid State Relays are studied. Drivers, Buffers, Interfacing, Pre-amps, Amplifiers, Active Filters, Mixers, Oscillators, and Phase Controllers are built and tested.

*Prerequisite: EET 158*

## **EET 178 (4 credits)** **Sequential Digital Logic (w/Lab)**

Comprehensive coverage of combinational and sequential logic circuits including adders, subtractors, flip-flops, shift registers, counters, digital multiplexors/ de-multiplexors, and A/D and D/A conversions. Electronic equipment schematics are reviewed to develop technician-level skills. Circuits are built from schematics and test equipment (DVM, logic analyzer, digital signal generator, and circuit simulation software) is used to learn the operation of the circuits.

*Prerequisite: EET 128*

## **EET 217 (4 credits)** **Microprocessors/Microcontrollers (w/Lab)**

This course is an introduction to the basic architecture and instruction sets of microprocessors and microcontrollers. Learning activities include basic assembly language programming, working with programming IDE environment, software simulation tools, hardware emulation tools, and logic analysis of hardware signals. Both Harvard architecture and von Neumann architecture devices are covered.

*Prerequisites: EET 128 and EET 178*

## **EET 222 (4 credits)** **Interfacing and Programming Microprocessors (w/Lab)**

This course involves the interfacing of basic input and output devices at the chip level to microprocessors and microcontrollers and also includes their support ICs and common peripheral devices. Learning activities include interfacing, programming (at assembly language level) and modifying existing assembly and C language code. Test equipment—including DSOs, DVMs, logic analyzers, and data analyzers—is used in support of these activities.

*Prerequisite: EET 217*

**EET 238 (4 credits)**  
**Interfacing and Basic Control Circuits w/Lab**

This course will provide an introduction to common interfacing schemes and foundational control circuits. The student will gain insight into concepts involved in interfacing the outside world to and from a controller. The student will be introduced to basic circuits, ladder diagrams, and GUI's (graphic user interfaces) to create HMI's (human machine interfaces). .

*Prerequisite: Successful completion of 1st year EET courses*

**EET 258 (4 credits)**  
**Automation and Control Systems with PLCs I (w/Lab)**

This course handles electronic topics from an industrial viewpoint and deals with actual control systems utilizing programmable logic controllers (PLCs), IEC-61131 programming concepts, and industrial circuits. It also serves as introduction to process control, industrial process techniques, and instrumentation. During this course, the PLC is used as the control device where possible and therefore PLC knowledge is advanced in both interfacing and programming areas.

*Prerequisites: EET 108, EET 118, and EET 128*

**EET 268 (4 credits)**  
**Automation and Control Systems with PLCs II (w/Lab)**

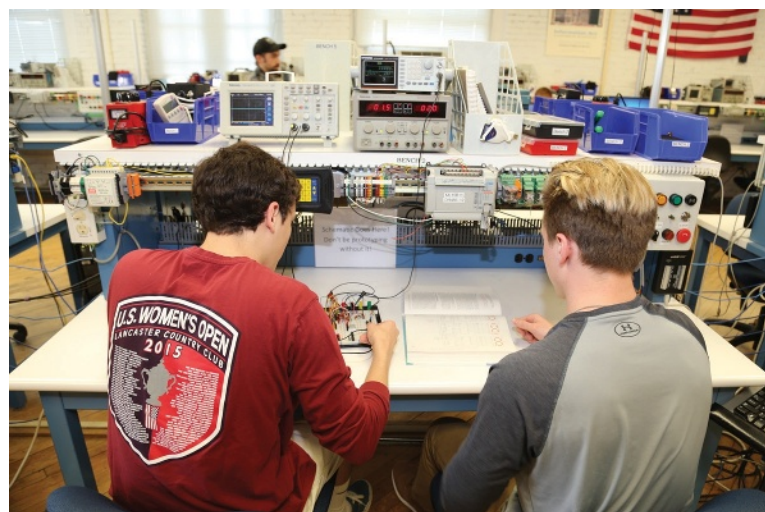
This course introduces mechanical, pneumatic, and photoelectric transducer devices used to convert all types of stimuli to electronic pulses and their use in industrial control circuits. Most activities use the PLC as the control element. Advanced ladder programming skills and higher-level language IEC-61131 programming is also covered. Industrial networking topics for control systems include RS232, TCP/IP, DH+, Modbus, DeviceNet, ASi, and other industrial networks. Motor and motion control topics include AC, DC, servo, and stepper motor operation. Motor and motion control systems are put into practical use and discussed as part of robotic systems.

**EET 278 (4 credits)**  
**Data Acquisition and Control Project**

Students create a control system of their own design. The project incorporates topics from all semesters. Programming and interfacing are implemented with an automation emphasis. Aspects include design, construction, testing, and documentation.

*Prerequisite: Successful completion of first three semesters of EET courses*

*Co-requisites: EET 258 and EET 268*





# electro-mechanical technology

Electro-Mechanical Technology (or mechatronics) is one of the most in-demand and highly sought-after careers in the manufacturing industry. The combination of electrical and mechanical skills based in computer-aided drafting, and machine technology create a unique blend of knowledge desirable to industry. These technicians are trained in a variety of skill areas, allowing companies to utilize their knowledge for a vast array of technical and mechanical issues. When necessary, industry will call on more advanced specialists, however, for the everyday issues that arise which could cost the company revenue when they occur. Having a multi-skilled technician on staff that can address issues immediately allows companies to continue production at a minimal loss. Electro-mechanical technicians have become essential positions in the manufacturing industry.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Disassemble machinery or equipment to remove parts and make repairs.
- Repair or replace broken or malfunctioning components of machinery or equipment.
- Repair or maintain the operating condition of industrial production or processing machinery or equipment.
- Examine parts for defects, such as breakage or excessive wear.
- Reassemble equipment after completion of inspections, testing, or repairs.
- Observe and test the operation of machinery or equipment to verify the adequacy of repairs.
- Clean, lubricate, or adjust parts, equipment, or machinery.
- Analyze test results, machine error messages, or information obtained from operators to diagnose equipment problems.
- Record repairs and maintenance performed.

**Donald R.Dagen, Instructor**  
BSME: Penn State University

**Arthur Jackson, Instructor**  
AAS: Lincoln Technical Institute



## **MODEL SCHEDULE FOR ELECTRO-MECHANICAL TECHNOLOGY**

### **SEMESTER 1**

ELME 104 Mechanical Systems I	4
ELME 105 Manufacturing Fundamentals	4
ELME 107 Electrical Systems I	4
MATH 137 Intermediate Algebra or Pre-Calculus (4 credits)	3
ENG 106 Composition I	3

### **SEMESTER 2**

ELME 109 Programmable Logic Controllers I	4
ELME 116 Mechanical Systems II	4
ELME 117 Electrical Systems II	4
MATH 141 Trigonometry or If Pre-Calculus (MATH 207) selected, then ELECTIVE	3
ENG 216 Technical Writing	3

### **SEMESTER 3**

ELME 204 Mechanical Systems III	4
ELME 208 Programmable Logic Controllers II	4
ELME 215 Robotics and Motion Control	4
ELECTIVE	3
PHYS 213 General Physics	4

### **SEMESTER 4**

ELME 214 Mechatronics Seminar & Advanced Project	4
ELME 218 Process Control and Industrial Instrumentation	4
ELME 225 Computer Integrated Manufacturing Sys & PLC III	4
Humanities Elective	3

### **ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE General Education Elective	3
ELECTIVE General Studies Elective (only w/Pre-Calculus)	3

**TOTAL CREDITS** **74**

# electro-mechanical technology (mechatronics) (ELME)

## **ELME 104 (4 credits)** **Mechanical Systems I**

This course introduces the principles and applications of the most commonly found mechanical drive and fluid power components in an industrial manufacturing environment. Topics include mechanical power transmission devices, hydraulics, and pneumatics through a fundamental level along with related construction and troubleshooting techniques. All course material is supplemented with practical hands-on exposure to the items described.

## **ELME 105 (4 credits)** **Manufacturing Fundamentals**

This course provides students with an overview of the various types of manufacturing that take place in the discrete, hybrid, and continuous sectors and of the jobs that must be performed within manufacturing. The course provides an introduction to the techniques and resources that manufacturers employ to improve operations, preparing students for independent investigating and life-long learning. It provides basic knowledge and skills with regard to print/schematic reading, CAD drawing, measurement, and quality assurance. At least one plant tour is included as part of this course to provide firsthand validation of the topics covered.

## **ELME 107 (4 credits)** **Electrical Systems I**

This course covers the principles and application of alternating current (AC) and direct current (DC) electricity, industrial sequential control, and electrical controls construction as found in a typical manufacturing environment. Topics include AC and DC circuit analysis and measurement in resistive, capacitive, and inductive circuits; AC fixed-speed motor control; control transformers, relays, timers, and counters; mechanical, pneumatic, and hydraulic input and output devices; sequencing and logic functions; introduction to component and systems troubleshooting; electrical wiring practices; conduit and raceways; and requirements for conductors, disconnects, and raceways as specified by the National Electric Code (NEC). All course material is supplemented with practical hands-on exposure to the items described.

## **ELME 109 (4 credits)** **Programmable Logic Controllers I**

This course covers the principles and application of programmable logic controllers (PLCs) as found in a typical manufacturing environment. Topics include understanding the physical components that make up a PLC, basic PLC programming, and understanding the components that make up input/output, including AC/ DC discrete input modules and analog input and output modules; how these

modules connect to the PLC; and to output devices such as motor controls, variable frequency drives, valves, and other types of machine controls.

## **ELME 116 (4 credits)** **Mechanical Systems II**

This course covers the principles and applications of the most commonly found mechanical drive and fluid power components in an industrial manufacturing environment. Topics include mechanical power transmission devices and pneumatics and hydraulics through an intermediate level along with related construction and troubleshooting techniques. All course material is supplemented with practical hands-on exposure to the items described.

## **ELME 117 (4 credits)** **Electrical Systems II**

This course covers the principles, application, troubleshooting, and maintenance of rotating electrical motors and electronic motor drives as used in industry. Topics include various types of single- and three-phase motors, various types of DC motors, reduced voltage starting, braking, DC electronic drives and AC variable frequency drives. The course builds upon the principles and applications covered in ELME 107.

## **ELME 204 (4 credits)** **Mechanical Systems III**

This course covers the principles and applications of the most commonly found mechanical drive and fluid power components in an industrial manufacturing environment. Topics include mechanical power transmission devices, pneumatics, and hydraulics through at an advanced level along with related construction and troubleshooting techniques. All course material is supplemented with practical hands-on exposure to the items described.

## **ELME 208 (4 credits)** **Programmable Logic Controllers II**

This course covers the principles and application of programmable logic controllers (PLCs) featuring the IEC 61131-3 programming standard. Topics include how to install PLCs; how to configure modules; how to wire input and output modules, including temperature-sensing devices (thermocouples and resistive temperature detectors) and analog devices featuring 0–10 volts and 4–20 ma standards. The course also includes programming the built-in human-machine interface (HMI) which allows program control and status update through a built-in touch screen.



### **ELME 214 (4 credits)** **Mechatronics Seminar and Advanced Project**

This course provides a capstone experience for the associate of applied science degree in Electro-Mechanical Technology by requiring that students—with a teammate(s)—apply skills and knowledge from each of the program areas to an independent mechatronics project. Students develop and implement a project plan and budget approved by the instructor that demonstrates the ability to integrate the skills and knowledge obtained over the previous three semesters of study. Students work with actual industrial equipment and machinery in a realistic application. This course broadens students' knowledge with respect to technology suppliers, equipment, and applications. It is strongly suggested that students begin planning for this course during the semester prior to the semester in which the course is completed.

### **ELME 215 (4 credits)** **Robotics and Motion Control**

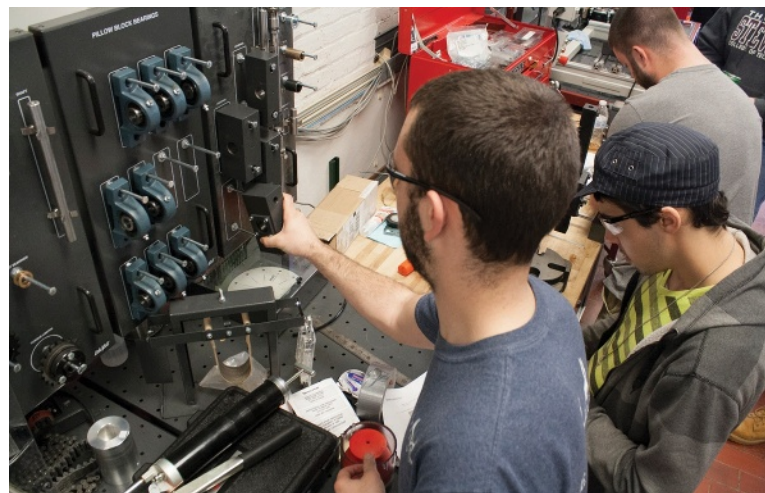
This course provides students with a background in the programming and application of industrial robots and general purpose synchronized multi-axis motion control. Expanding upon previously-learned concepts, this course examines the combination of multiple axes of motion to perform useful functions such as creating a flexible manufacturing system utilizing robots and broadens the knowledge of different programming languages to initiate and control motion sequences. Students learn how to implement electronically many of the simple machines introduced in previous courses such as gear drives, belt drives, line shafts, and cams.

### **ELME 218 (4 credits)** **Process Control and Industrial Instrumentation**

This course covers the fundamentals of process control and instrumentation as applied in industry for the control of level, flow, temperature, and pressure. The concept of a control loop is introduced and each of the loop's components—sensor, controller, and final element—are examined. Design, documentation, operation, performance tuning, and troubleshooting of single-loop systems is discussed.

### **ELME 225 (4 credits)** **Computer-Integrated Manufacturing Systems and PLCs III**

This course guides students through the processes of interfacing and integrating manufacturing components and unit operations into useful systems. Students work with touch screen displays (HMI) networked to programmable logic controllers. System integration is accomplished using digital input/output, DeviceNet, and TCP/IP Ethernet networking. The course involves working with a flexible manufacturing lab that includes a bar code reader, vision system, servo, and AC drive to manipulate a conveyor and other equipment to sort and fill.



# engineering CAD technology

The Engineering CAD Technology program prepares graduates for positions as entry-level CAD operators in a wide range of manufacturing and engineering industries. Skills acquired from this program of study will allow students to become an integral part of product design and the manufacturing of those products. Graduates will apply specialized knowledge and skills utilizing state-of-the-art CAD software to think critically, to solve problems, and to effectively communicate with colleagues and supervisors in today's ever-changing work environment.

From preliminary drawings and sketches, to parametric design, to animated assemblies, graduates will learn how to simplify, enhance and streamline the manufacturing and engineering processes utilizing CAD. Students acquire comprehensive skills in the following technical areas: fundamentals of drafting, technical drawing, process pipe drafting, processes of manufacturing, geometric dimensioning and tolerancing (GD&T), metals fabrication drafting, and power transmission. Students' CAD skills are developed with a comprehensive exposure to the latest software releases of AutoCAD®, Autodesk Inventor®, SolidWorks®, and Pro/Engineer®.

Upon completion of the program, graduates will find various employment opportunities in the following fields:

- CAD operator
- Cost estimator
- Drafting manager
- Drafting supervisor
- Mechanical detailer
- Mechanical design technician

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Produce working drawings such as detail, subassembly, and full-assembly drawings utilizing manual, freehand, and computer-aided drafting techniques.
- Recognize and apply the ASME Y14.5 guidelines in the creation of mechanical working drawings.
- Apply industrial standards to the creation of working drawings of sheet-metal components, welded assemblies, electronics drafting, piping systems, and power transmission components.
- Identify and understand basic manufacturing processes as they relate to the dimensioning of working drawings.
- Demonstrate an ability to work independently and to apply interpersonal and technical skills to solve problems as a member of a multi-disciplinary team.
- Demonstrate skills and proficiency in multiple 2D and 3D solid modeling CAD software packages.



**Donald Hart, Assistant Professor**

AST: Thaddeus Stevens College of Technology  
PCT Technical Committee, Sheet Metal  
Society of Manufacturing Engineers (SME): Member  
Technology Students Association (TSA):  
State Conference Planning Team

**James Knapp, Associate Professor**

MS: Millersville University  
BS: Millersville University  
American Design Drafting Association (ADDA): Member  
Society of Manufacturing Engineers (SME): Member  
International Technology and Engineering Education  
Association (ITEEA): Member  
Technology Students Association (TSA):  
State Event Coordinator  
State Conference Planning Team  
Epsilon Pi Tau (EPT) Honor Fraternity: Laureate Member



**MODEL SCHEDULE FOR  
COMPUTER AIDED DRAFTING TECHNOLOGY**

**SEMESTER 1**

ECAD 105 Fundamentals of Machining	3
ECAD 112 Technical Drawing	3
ECAD 120 Intro to AutoCAD Applications	3
ECAD 130 Advanced AutoCAD Applications	3
MATH 137 Intermediate Algebra (or higher math)	3
CIS 211 Microsoft Excel	3

**SEMESTER 2**

ECAD 150 Intro to AutoDesk Inventor	3
ECAD 160 Advanced AutoDesk Inventor	3
ECAD 167 Process Pipe Drafting	3
ECAD 171 Processes of Manufacturing	3
MATH 141 Trigonometry(or higher math)	3
ENG 106 Composition I	3

**SEMESTER 3**

ECAD 207 Geometric Tolerancing	3
ECAD 211 Metals Fabrication Drafting	3
ECAD 220 Intro to Solid Works Applications	3
ECAD 230 Advanced Solid works Applications	3
ENG 216 Technical Report Writing	3
Physics Elective	3

**SEMESTER 4**

ECAD 250 Intro to Pro/Engineer Applications	3
ECAD 260 Advanced Pro/Engineer Applications	3
ECAD 266 Working Drawings	3
ECAD 271 Power Transmission	3
ENG 221 Public Speaking	3
Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
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<b>TOTAL CREDITS</b>	<b>73</b>
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# engineering CAD technology (ECAD)

## **ECAD 105 (3 Credits)** **Fundamentals of Machining (3 credits)**

This course introduces students to common machine tools and processes. Students are exposed to the various hand and power tools as well as the vertical mill, engine lathe, and the surface grinder.

## **ECAD 112 (3 Credits)** **Technical Drawing**

A study of orthographic projection and drawing creation with applications in multi-view drawings including sectioning and auxiliary views. Techniques in pictorial drawing are also used to convey orthographic views as pictorial representations.

*Co-requisites: ECAD 105 and ECAD 120 or instructor approval*

## **ECAD 120 (3 Credits)** **Introduction to AutoCAD® Applications**

A practical application of 2D orthographic skills utilizing AutoCAD® integrating knowledge of software commands with drafting standards. Students also experience dimensioning styles, templates, and symbols libraries. During the course, students create a series of mechanical drawings.

*Co-requisites: ECAD 105 and ECAD 112 or instructor approval*

## **ECAD 130 (3 Credits)** **Advanced AutoCAD® Applications**

An advanced application of 2D orthographic skills utilizing AutoCAD® integrating knowledge of software commands with drafting standards. Students also experience advanced 2D commands, system variables, symbols libraries, attributes, customization, and macros. During the course, students create a series of mechanical working drawings packets.

*Prerequisite: ECAD 120 or instructor approval*

## **ECAD 150 (3 Credits)** **Introduction to AutoDesk Inventor® Applications**

An AutoCAD Inventor® applications course with an emphasis on solid modeling parts and basic assemblies and the transition from 3D solid models to 2D working drawings.

*Prerequisite: ECAD 130 or instructor approval*

## **ECAD 160 (3 Credits)** **Advanced AutoDesk Inventor® Applications**

An advanced AutoDesk Inventor® applications course with an emphasis on advanced modeling of parts, advanced assemblies, and working drawings and the generation of 2D working drawings from the solid models. Add-on packages such as pipe and tube, sheet metal, weldments, and wire harness diagrams are explored.

*Prerequisite: ECAD 150 or instructor approval*

## **ECAD 167 (3 Credits)** **Process Pipe Drafting**

An intermediate drafting course covering the topics appropriate for reading and creating the working drawings necessary to instruct in the assembly of piping and equipment for industrial processes. Students are also exposed to cable and harness drafting and the process in which drawings are created.

*Co-requisites: ECAD 150 and ECAD 160 or instructor approval*

## **ECAD 171 (3 Credits)** **Processes of Manufacturing**

An introduction to the processes commonly employed in the conversion of raw materials into finished products. This course provides students with a solid understanding of the operations necessary to cast, mold, form, separate, condition, assemble, and apply surface finishes to manufactured products.

*Prerequisite: ECAD 105*

*Co-requisite: ECAD 150 or instructor approval*

## **ECAD 207 (3 Credits)** **Geometric Tolerancing**

A study of the American Society of Mechanical Engineers (ASME) dimensioning guidelines including geometric dimensioning and tolerancing (GD&T). This course emphasizes the creation and usage of the drafting symbols necessary to define the form, fit, and function of mechanical components.

*Co-requisite: ECAD 211*

## **ECAD 211 (3 Credits)** **Metals Fabrication Drafting**

An intermediate drafting course covering the topics pertinent to reading and creating the working drawings necessary to instruct welders and metal fabricators in the creation of welded assemblies. This course includes a thorough review of industrial welding drafting practices and practical applications of the symbols required to specify them in an assembly.

*Prerequisite: ECAD 171*

*Co-requisite: ECAD 207 or instructor approval*

## **ECAD 220 (3 Credits)** **Introduction to SolidWorks® Applications**

Introduces students to the essential applications with an emphasis on how to use the SolidWorks® mechanical design software to build parametric models of parts and assemblies and how to make drawings of those parts and assemblies.

*Prerequisites: ECAD 112 and ECAD 160 or instructor approval*

### **ECAD 230 (3 Credits)** **Advanced SolidWorks® Applications**

Advanced SolidWorks® applications course focuses on developing skills central to the successful use of SolidWorks® parametric software. It is designed for SolidWorks users who have mastered the basics of parametric solid model design but who need to continue building skills for working with imported models, surface modeling, and an introduction to finite element analysis (FEA) using simulation software and model analysis.

*Prerequisite: ECAD 220 or instructor approval*

### **ECAD 250 (3 Credits)** **Introduction to Pro/Engineer® Applications**

Introduces students to the essential applications that focuses on learning core-modeling skills in this comprehensive, hands-on course. Topics include sketching, part modeling, assemblies, drawings, and basic model management techniques. The course also includes a comprehensive design project that enables to practice new skills by creating realistic parts, assemblies, and drawings.

*Prerequisite: ECAD 230 or instructor approval*

### **ECAD 260 (3 Credits)** **Advanced Pro/Engineer® Applications**

Focuses on developing skills central to the successful use of Pro/Engineer® parametric software. It is designed for Pro/Engineer® users who have mastered the basics of parametric solid model design but who need to continue building skills for working with imported models, surface modeling, sheet metal models and mechanism design which permits users to animate their assemblies in a mechanical fashion. Other skills covered are simplified reps, top-down design, flexible components, shrink-wrap feature, skeleton models, layouts, and advanced drafting commands.

*Prerequisite: ECAD 250 or instructor approval*

### **ECAD 266 (3 credits)** **Working Drawings**

An advanced drafting course emphasizing the practices necessary to produce detail, sub-assembly, and full assembly mechanical drawings for industrial applications.

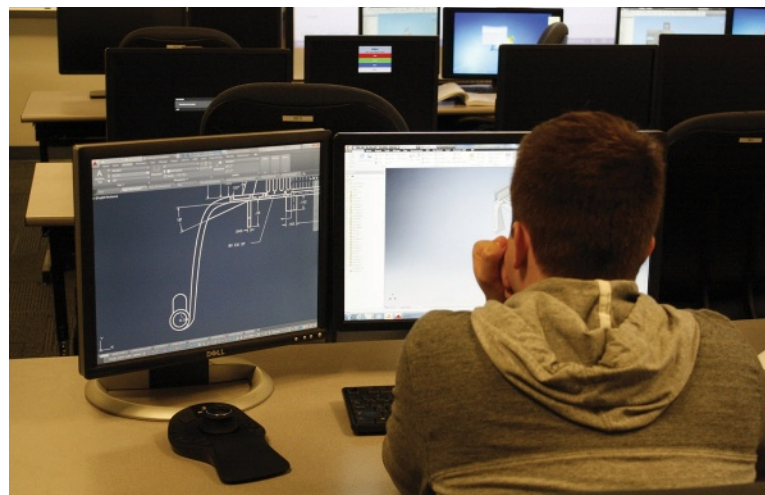
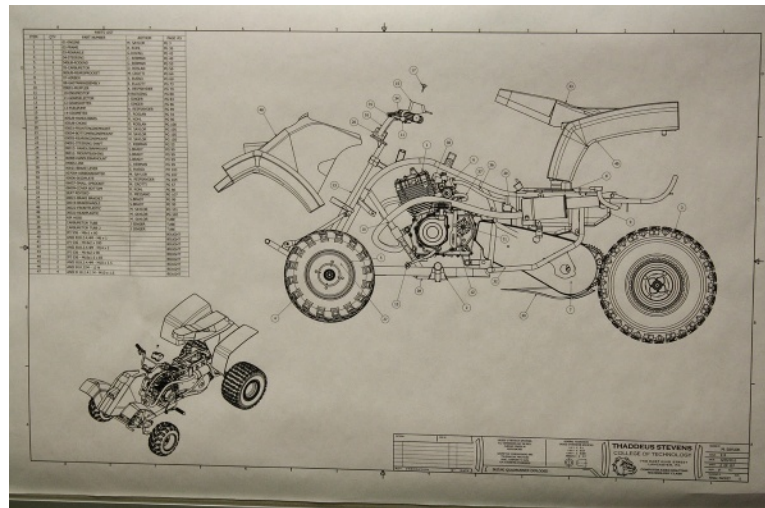
*Co-requisite: ECAD 271 or instructor approval*

### **ECAD 271 (3 credits)** **Power Transmission**

A study of power transmission fundamentals, the related computations, and drafting methodologies. Applications include drafting standards for utilizing bushings, keys, sheaves, belts, chains, clutches, and conveyor pulleys in working assembly drawings.

*Prerequisites: MATH 137 and MATH 141*

*Co-requisite: ECAD 266 or instructor approval*



# graphic communications & printing

The Graphic Communications and Printing Technology program provides a comprehensive understanding of the printing process and related fields. The student receives training in all major areas, with preparation to enter one of several printing fields, depending on interest and ability.

Graduates with technical and mechanical interests find employment in desktop publishing, pre-press, presswork, and bindery operations. Skills in computer operations, electronics, photography, chemistry, and physics will also be useful in these areas.

Graduates with good English and math skills will find employment in proofreading, estimating, production planning, and sales. Those students with artistic talent may enter layout and design, advertising, or commercial art.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Recognize the major printing processes and their products as well as the advantages of each process.
- Demonstrate the skills needed for entry-level positions (as advanced trainees) in the following areas: layout and design, copy preparation, desktop publishing, film assembly and plate processing, direct-to-plate applications, press operations, and bindery operations.
- Assess personal strengths and limitations in various areas of the graphic arts.
- Demonstrate good work habits: Promptness to class, willingness to work, and the ability to accept supervision.
- Demonstrate knowledge of equipment and use appropriate safety precautions.
- Understand the various production departments and the contributions each makes to the finished product.
- Write clear, concise, legible, and accurate technical reports using standard grammatical English.
- Demonstrate skill in basic verbal communication.
- Solve basic math problems related to printing operations.



**Bradley L. Adams, Assistant Professor**

BS: Millersville University

**Michael Brady, Instructor**

BS: Walden University

AAS: Thaddeus Stevens College of Technology

## **MODEL SCHEDULE FOR GRAPHIC COMMUNICATIONS & PRINTING TECHNOLOGY**

### **SEMESTER 1**

GRPH 116 Introduction to Desktop Publishing	4
GRPH 120 Digital Photography	3
GRPH 126 Printing Processes I	4
CIS 111 Intro to Computer Applications	3
ENG 106 English Composition	3

### **SEMESTER 2**

GRPH 150 Intro to Lithography	3
GRPH 155 Intro to Screen Printing	3
GRPH 160 Graphic Communications I	3
GRPH 165 Multimedia and Web Design	3
Math 111 Business Math(or higher)	3
ENG Elective ENG 216 or ENG 221	3

### **SEMESTER 3**

GRPH 207 Bindery and Finishing	3
GRPH 222 Graphics Communications II	3
GRPH 214 Print Marketing	3
GRPH 228 Printing Processes II	3
CIS 211 Microsoft Excel	3
Humanities Elective	3

### **SEMESTER 4**

GRPH 262 Color Theory	3
GRPH 267 Graphics Communications Studio	3
GRPH 258 Advanced Lithography	3
GRPH 272 Web Design	3

### **ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

ELECTIVE General Education Elective	3
ELECTIVE Science Elective	3
HEAL Elective HEAL 106 or HEAL 111	1

<b>TOTAL CREDITS</b>	<b>72</b>
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# graphic communications and printing technology (GRPH)

## **GRPH 116 (4 credits)** **Introduction to Desktop Publishing**

Introduction to the hardware and software used in desktop publishing. Topics include graphical user interface and current industry uses such as design, layout, typography, illustration, and imaging. Students receive hands-on training in the computer environment using current production software. Basic scanning techniques are demonstrated.

## **GRPH 120 (3 Credits)** **Digital Photography**

This course covers basic digital camera use through practical application. The assignments center on composition, lighting, and the use of digital photography within the graphic communications industry. Color theory and digital manipulation allow students to integrate their digital photographs into page layout and graphic design concepts.

## **GRPH 126 (4 credits)** **Printing Processes I**

Covers the various printing processes including offset, screen, flexo, and gravure. Career opportunities, salary potential, and the role each process plays in the industry today are also discussed. Safety procedures and operations are identified. Upon completion, students should be able to demonstrate an understanding of the major characteristics, advantages, and disadvantages of each process.

## **GRPH 150 (3 credits)** **Introduction to Lithography**

This course introduces students to the basic fundamentals of lithography. Through practical application, students develop a working knowledge of this printing process with a strong concentration into multi-color image reproduction and image registration.

*Prerequisite: GRPH 126; minimum grade of "C" required*

## **GRPH 155 (3 credits)** **Introduction to Screen Printing**

This course introduces students to the basic fundamentals of screen printing. Through practical application, students develop a working knowledge of this printing process with a strong concentration into multi-color image reproduction and image registration.

*Prerequisite: GRPH 126; minimum grade of "C" required*

## **GRPH 160 (3 credits)** **Graphic Communications I**

Covers the history, development, and commercial applications of printing processes. Students learn about the curriculum and the industry including its processes, products, and careers. Emphasis is placed on the attributes which are most desirable for successful entry and advancement.

## **GRPH 165 (3 credits)** **Multimedia and Web Design**

Introduces the fundamentals of design and production for presentations and the World Wide Web. Basics of hypertext markup language (HTML), the use of authoring software, and making portable data format (PDF) documents for internet downloads and multimedia basics are covered.

*Prerequisite: GRPH 120; minimum grade of "D" required*

## **GRPH 207 (3 Credits)** **Bindery and Finishing**

Bindery and finishing is an increasingly important part of the printing process as it can provide unique physical characteristics to a finished product. Students develop an understanding of both the physical processes of bindery and finishing, along with understanding the creative application and added value these processes can provide to a final piece. Along with theory, students have the opportunity to operate folding equipment, produce die cuts, and create varnishes.

## **GRPH 222 (3 Credits)** **Graphic Communications II**

This course provides an overview of the history of graphic communications, along with an in-depth analysis of what graphic communications is and how it reflects culture. Typography is a primary focus in this course. Students are challenged to develop creative solutions to problems using different techniques for developing ideas.

*Prerequisite: GRPH 160*

## **GRPH 214 (3 Credits)** **Print Marketing**

Commercial printers no longer simply provide a printed piece. They provide various solutions to communicating messages through different techniques along with the management of data. This course looks at how print is used to connect companies to consumers through trends in marketing.

### **GRPH 228 (3 Credits)** **Printing Processes II**

In a continuation of GRPH 126, the major printing processes are discussed in greater detail, primarily offset printing. Students are introduced to multiple unit-offset press, press settings, and press troubleshooting. The aspects of paper and ink are discussed. An emphasis is placed on creating print ready files following industry specifications.

*Prerequisite: GRPH 126*

### **GRPH 262 (3 Credits)** **Color Theory**

Color theory is the study of the science of color and light as it relates to the printing industry. Several color spaces are discussed, along with the usage for each. A focus is placed on managing color within the printing industry by means of devices, software, and techniques.

### **GRPH 258 (3 Credits)** **Advanced Lithography**

In this course, printing standards and quality control metrics for process color printing are examined. Students continue to expand their knowledge of the inner workings of an offset press using a press simulator program. The use of printing in marketing is also discussed.

*Prerequisite: GRPH 228*

### **GRPH 267 (3 Credits)** **Graphic Communications Studio**

Communication skills are challenged to create unique solutions for a host of design problems. Emphasis is placed on the design process and working with others to craft a message. The course ends with a cumulative capstone project tasking students to design and produce several products. Students are also tasked with the creation of a portfolio.

*Prerequisite: GRPH 222*

### **GRPH 272 (3 Credits)** **Web Design**

The primary languages needed for web development, HTML and CSS, are introduced along with how to design for the web.

*Prerequisite: GRPH 165*





# heating, ventilation, air conditioning & refrigeration

The HVAC/R program is unique because it treats designing, retrofitting, testing, and balancing on a problem-solving level. This specialized program prepares the technician for the fast-growing, highly technical HVAC/R field.

The challenge for the service technician is to optimize the service operation of HVAC/R systems to maximize customer and employer satisfaction. Using computers to replicate various conditions that could be encountered, students develop a plan of action to use with live work.

Students learn current methods of identifying and performing efficiency evaluations on various types of heating, ventilation, and air-conditioning systems as well as adjusting and balancing equipment for maximum performance.

In addition to HVAC/R classroom theory sessions, students also perform service and installation on numerous live projects on and off campus. The HVAC/R laboratory includes tools, equipment, computers, and instrumentation typically found in commercial, residential, and industrial settings. The lab also includes ground source heat pumps, gas efficient furnaces, regular heat pumps, oil-fired furnaces, gas and oil boilers, ice machines, walk-in boxes, roof-top equipment, chiller systems, and commercial refrigeration trainers.

Challenging careers abound on a national level with firms offering graduates a variety of positions as service technicians, installation technicians, estimators, and in-plant industrial technicians. High school prerequisites for this program are Algebra I & II, and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

- A graduate of this program will be able to do the following:
- Demonstrate the ability to do technical work in a variety of heating, cooling, and plumbing and refrigeration fields; apply safety standards and understand and work with technical developments in the industry.
- Apply concepts of algebra and physics in the layout, design, development, and analysis of refrigeration and air conditioning equipment and systems.
- Identify and demonstrate correct use of tools, materials, and equipment used in the trade.
- Demonstrate the ability to read and interpret blueprints and use blueprints when installing equipment.
- Troubleshoot heating, cooling, and refrigeration equipment using standard troubleshooting procedures.
- Write clear, concise, legible, and accurate technical reports using technical English and apply verbal communication skills in job-related activities.
- Read and interpret electrical schematics and use schematics when installing and repairing equipment.
- Estimate the cost of an installation and design and lay out an effective system for a specific location and use.
- Demonstrate knowledge of the operation and use of hermetic, reciprocating, and centrifugal compressors.
- Apply basic knowledge of airflow, ventilation, and energy conservation concepts to the design of systems, using modern building design and solar energy technology.

**Matthew S. Gote, Assistant Professor**  
AAS: Williamsport Area Community College

**Steven P. Phyllaier, Associate Professor**  
BA: Pillsbury College  
Certificate Member Specialist of the Refrigeration Service  
Engineers Society (RSES)  
Charter Member of the Council of Air Conditioning &  
Refrigeration Educators (CARE)  
Member/Certified Industrial Refrigeration Operator of the  
Refrigerating Engineers & Technicians Association  
(RETA) Certified by the North America Technician  
Excellence (NATE)  
EPA Section 608 Universal Certificate

**Timothy Strunk, Instructor**  
AES (Refrigeration & HVAC): Reading Area  
Community College  
AAS (Pennsylvania Vocational Education II Certificate):  
Temple University



## MODEL SCHEDULE FOR HVAC-R

### SEMESTER 1

HVAC 122 OSHA Electrical & Construction Safety	1.5
HVAC 126 Electrical Fundamentals for HVAC	1
HVAC 130 Electrical Components	1
HVAC 134 Electrical Circuits	1
HVAC 138 Lab Practice I: Electrical Applications	2
HVAC 142 HVAC Installation Procedures	1.5
HVAC 146 Lab Practice II: Installation Applications	2
HVAC 150 Principles of Refrigeration	3
Math Elective Math 137 or Math 126	3
ENG 106 Composition I	3

### SEMESTER 2

HVAC 155 Residential Heating Systems	2
HVAC 160 Lab Practice III: Heating Applications	2
HVAC 167 Refrigeration System Components	2
HVAC 170 Lab Practice IV: Cooling Applications	2
HVAC 175 Refrigerant Management	2
HVAC 180 Mechanical Codes for HVAC/R	1
Math Elective Math 132 or Higher	3
ENG 221 Public Speaking or	3
ENG 216 Technical Writing	3

### SEMESTER 3

HVAC 206 Air Conditioning Systems	4
HVAC 211 Heat Pump Systems	3
HVAC 216 Systems Installation and Start Up	3
HVAC 221 Commercial Refrigeration	3
ELECTIVE Any Science Course	3
CIS ELECTIVE CIS 105 or 111	3

### SEMESTER 4

HVAC 256 Load Calculations	3
HVAC 261 Controls of HVAC	3
HVAC 266 Ventilation	3
HVAC 271 System Servicing and Troubleshooting	3
Humanities Elective	3

### ADDITIONAL GENERAL EDUCATION REQUIREMENTS

HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE General Education Elective	3
TOTAL CREDITS 75	

# heating, ventilation, air conditioning & refrigeration (HVAC)

## **HVAC 122 (1.5 credits)**

### **OSHA Electrical and Construction Safety**

This course is designed to meet the requirements that all service technicians must have for training in the rules and regulations of Occupational Safety and Health Administration (OSHA) Construction Safety and Building Maintenance Electrical Safety. Emphasis is on the requirements for compliance, identifying a proper lock-out/tag-out policy, and procedures a technician should follow for safe electrical work.

## **HVAC 126 (1 credit)**

### **Electrical Fundamentals for HVAC/R**

This course is designed to provide the basic knowledge of electrical theory as it pertains to the HVAC/R industry. The course emphasizes the basic electrical laws and definitions, generation and distribution of electrical power, function of controls and loads, and electrical measurements and testing.

## **HVAC 130 (1 credit)**

### **Electrical Components for HVAC/R**

This course exposes students to common HVAC/R system motors and controls. Emphasis is placed on the fundamentals of electrical theory as it pertains to the application and operation of motors, relays, thermostats, pressure switches, and other basic controls.

## **HVAC 134 (1 credit)**

### **Electrical Circuits for HVAC/R**

This course teaches commonly used electrical circuits of the HVAC/R industry as a foundation for a technician to install, troubleshoot, and service equipment. The emphasis is on drawing wiring diagrams, using schematics to install and wire basic electrical components, and the use of schematics for testing and troubleshooting electrical circuits.

## **HVAC 138 (2 credits)**

### **Lab Practice I: Electrical Applications**

Practical experience is provided to apply the theory learned concerning electrical components and controls of the HVAC/R industry. Students demonstrate the proper electrical installations for basic A/C and heating equipment. Emphasis is placed on the installation, testing and start-up operation of motors, relays, thermostats, pressure switches, and other basic controls.

## **HVAC 142 (1.5 credits)**

### **HVAC Installation Procedures**

This course introduces the basic methods, tools, and materials needed for the installation of the HVAC/R equipment to students. A foundational study of the purpose of various tools and skills necessary for their safe use is emphasized. Materials and joining methods of various piping, tubing, wiring, and ductwork systems as used in this industry is studied.

## **HVAC 146 (2 credits)**

### **Lab Practice II: Installation Procedures**

This course provides the practical hands-on skill training. Piping practice utilizes various refrigeration trainers and a selection of commonly used A/C and heating equipment. Residential duct systems are installed on working systems. Practice is provided for the development of skills needed for various methods of joining copper tubing, stainless steel natural-gas tubing, plastic, and iron pipe.

## **HVAC 150 (3 credits)**

### **Principles of Refrigeration**

This course provides a study of the basic principles of thermodynamics as applied to the refrigeration cycle. The Mollier diagram is used to display the purpose and operation of the various components used in the system at expected standard operating conditions. The lab portion provides practice in measuring various system performances.

## **HVAC 155 (2 credits)**

### **Residential Heating Systems**

This course provides a basic understanding of different types of oil and natural gas residential heating systems. Emphasis is on proper installation, sequence of operation, and proper maintenance requirements.

## **HVAC 160 (2 credits)**

### **Lab Practice III: Heating Applications**

This lab time provides the hands-on training pertaining to residential heating systems. Typical residential heating systems is utilized in the lab experience to master the skills necessary for proper installation and service. Students practice typical annual servicing, combustion analysis, and efficiency testing of fossil fuel heating systems.

## **HVAC 167 (2 credits)**

### **Refrigerant System Components**

Introduction to residential and light commercial A/C system components. This course details the following components of air conditioner and refrigeration systems: Evaporators, condensers, metering devices, compressors, and other safety and servicing system components. Emphasis is placed on applying the knowledge gained in HVAC 150, along with manufacturer specifications, to determine proper installation and operating conditions of these cooling system components.

## **HVAC 170 (2 credits)**

### **Lab Practice IV: Cooling Applications**

This lab provides the hands-on training for skills necessary to properly install and start-up comfort cooling systems. Students are required to assemble a refrigeration system and test it for proper operation under various conditions.



**HVAC 175 (2 credits)**  
**Refrigerant Management**

This course is designed to give students the knowledge to understand the laws on venting and handling of the various refrigerants covered in the Clean Air Act—Section 608. A requirement for this course is to take the EPA Technician Certification Exam provided by ARI. Lab practice is provided in refrigerant recovery, recycling, evacuation, and charging various small appliances, and high pressure appliances.

**HVAC 180 (1 credit)**  
**Mechanical Codes for HVAC/R**

This course introduces HVAC/R students to the current International Code Council (ICC) codes. The emphasis highlights the sections of these codes that are relevant to the technician for proper HVAC/R equipment installation. A brief overview of other national and local building codes is also provided.

**HVAC 206 (4 credits)**  
**Air Conditioning Systems**

Air conditioning benefits, unitary cooling, unitary combination cooling and heating equipment, central station systems, service and problem analysis, and absorption refrigeration system topics are studied.

*Prerequisites: HVAC 150 and HVAC 165*

**HVAC 211 (3 credits)**  
**Heat pump Systems**

Covers basic principles, components, and application of heat pump systems.

**HVAC 216 (3 credits)**  
**System Installation and Start Up**

Codes and standards, heating start-up, heating checkouts, heating operation, AC start-up, AC checkouts, AC operation, heat pump start-up, heat pump checkouts, and heat pump operation are covered.

**HVAC 221 (3 credits)**  
**Commercial Refrigeration**

Discusses system applications, refrigerated storage, and ice machines.

**HVAC 256 (3 credits)**  
**Load Calculations**

Covers refrigeration, psychometrics, heating load, and cooling load calculations.

**HVAC 261 (3 credits)**  
**Controls of HVAC**

Topics include controls, valves, regulators, sensing devices/fuel controls, residential control systems— heating/cooling, commercial and engineered control systems, and heat pump controls.

**HVAC 266 (3 credits)**  
**Ventilation**

Students learn about air flow principles/duct design, mechanical and electronic filtration, and fans.

**HVAC 271 (3 credits)**  
**System Servicing and Troubleshooting**

Refrigeration system problems, electrical troubleshooting, heating service/problem analysis, heat pump service/problem analysis, and AC service/problem analysis are covered.

**HVAC 310 (3 credits)**  
**Principles of Industrial Refrigeration I**

Covers the basics of industrial ammonia refrigeration including temperature/pressure relationship, thermodynamics, the refrigeration cycle, properties of refrigerants, compressor types, lubrication, evaporator types, condensers, high pressure receivers, and purgers.

**HVAC 320 (3 credits)**  
**Principles of Industrial Refrigeration II: Low Side Components**

Covers the many different types of refrigeration systems from flooded, direct expansion and pumped systems to 2-stage and cascade systems.

*Prerequisite: Either HVAC 150 or HVAC 310*

**HVAC 330 (3 credits)**  
**Principles of Industrial Refrigeration III: High Side Components**

Covers the high pressure or high side components of a typical industrial refrigeration system. Compressor and condenser design, operational theory, control, maintenance, and application are discussed, including their interrelation within the balance of a complete industrial refrigeration system.

*Prerequisite: Either HVAC 150 or HVAC 310*

**HVAC 340 (3 credits)**  
**Industrial Refrigeration Operations and Safety**

This course provides background and guidance for refrigeration plant managers, engineers, and operators who are charged with the important areas of day-to-day plant operation: Record keeping, preventive maintenance, safety, and regulatory requirements. This study is also recommended for anyone interested in understanding today's ammonia refrigeration requirements.

*Prerequisite: Either HVAC 150 or HVAC 310*

# machine tool & computer-aided manufacturing

Students in the Machine Tool and Computer-Aided Manufacturing program will spend considerable time in the study and actual operation of industrial equipment and tools to develop skills used by tool and die making companies and production and manufacturing facilities. This includes emphasis on the set up and operation of computer numerical controlled (CNC) lathes and milling machines. Students will also be introduced to computer-controlled measuring machines and computer-aided design/computer-aided machining (CAD/CAM) software and its applications. A strong project, method-driven curriculum assures both theoretical and practical skill development.

This program prepares students to enter the workforce fields of CNC, CAM, tool making, mold making, machine tool operating, quality control, industrial sales, and production or manufacturing. High school prerequisites for this program are Algebra I & II, and a GPA of at least 2.5.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate safe work habits and be conscious of safety when working with machinery.
- Read blueprints, interpret drawings, understand specifications, and establish tolerances.
- Apply mathematics in the machine tool technology (speeds, feeds, thread measurement, sine bar, etc.)
- Apply the principles of physics and metallurgy to the science of heat treatment operations, including hardening of steel, carburizing, case hardening, tempering, and annealing.
- Operate basic machine tools and demonstrate knowledge of their construction in relation to the metal industry.
- Demonstrate skills on computer numerical control machines and in digital readout.
- Operate abrasive cutting machinery; select and plan machining operations on this equipment.
- Demonstrate skills in quality control, inspection, gauging methods, and production control as they relate to manufacturing design and production.
- Demonstrate basic oral communication skills, speak logically, and use various types of oral and written communication techniques to promote good business relationships, to develop leadership, and to establish good employer-employee relationships.
- Demonstrate understanding of CAD/CAM programs for part design and generation of CNC code.

**Ronald C. Schwartz, Associate Professor**

BA: Millersville University

AST: Thaddeus Stevens College of Technology

PA Department of Labor and Industry Journeyman Tool

and Die Maker Certification

**Alex Surra, Instructor**

MEd, BSE: Millersville University

AAS: Thaddeus Stevens College of Technology

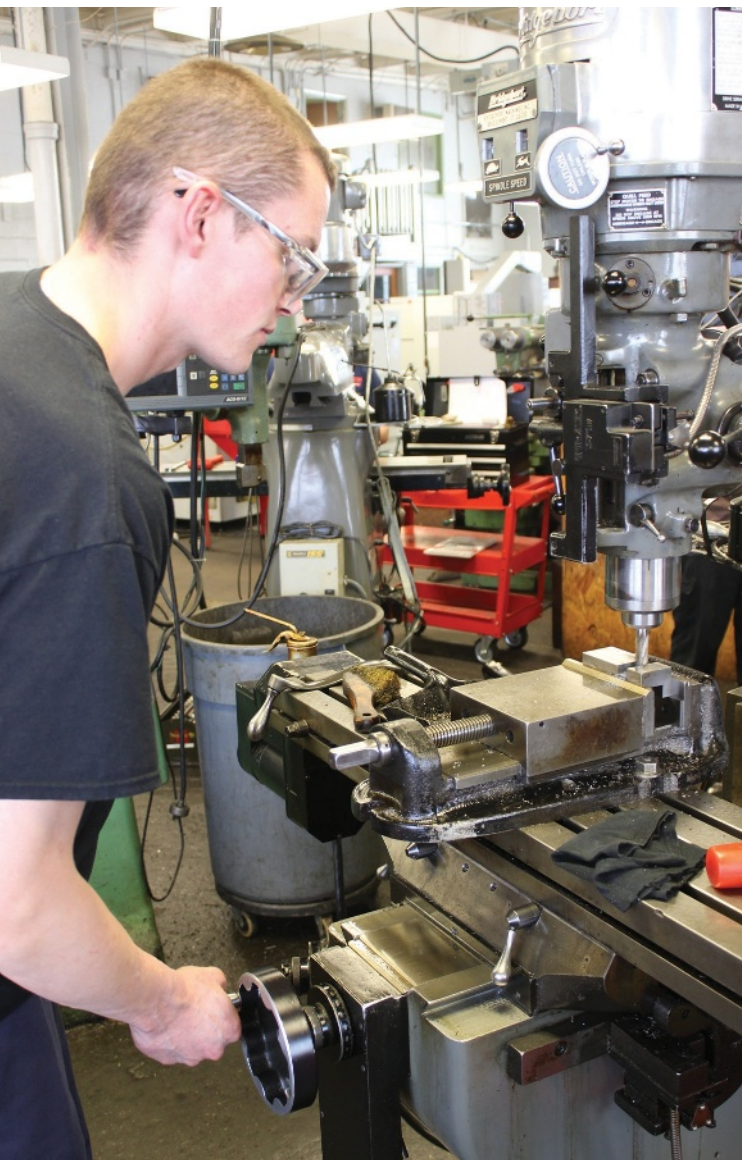
Level II Teaching Certificate: Commonwealth of PA OSHA

Authorized General Industry Trainer: Mid-Atlantic OTI

Education Center

**Jared Keim, Instructor**

AAS: Thaddeus Stevens College of Technology



**MODEL SCHEDULE FOR  
MACHINE TOOL & COMPUTER AIDED  
MANUFACTURING TECHNOLOGY**

**SEMESTER 1**

MACH 106 Blueprint Reading and Related Math	3
MACH 112 Cutting Tools and Measurement	3
MACH 118 Lathe and Vertical Milling Machine I	4
MACH 123 Surface Grinding and Abrasive Machining I	2
MATH 137 Intermediate Algebra	3
ENG 106 Composition I	3

**SEMESTER 2**

MACH 158 Lathe and Vertical Milling Machine II	3
MACH 222 CAD/CAM I	3
MACH 168 Machine Skills Lab	3
MACH 172 Computer Numerical Control I	3
MATH 141 Trigonometry	3
ENG 216 or ENG 221	3

**SEMESTER 3**

MACH 229 Machine Skills Lab II	4
MACH 267 Electrical Discharge Machining	1
MACH 161 Metallurgy	2
MACH 272 CAD/CAM II	3
MACH 227 CNC I 3	
CIS 105 Drawing with AutoCad	3
SCIENCE Any Physics or Chem Course	3

**SEMESTER 4**

MACH 257 Machine Skills Lab III or MACH 231 Machine Tool Internship	4
MACH 278 CAD/CAM III	3
MACH 276 CNC III	4
Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

ELECTIVE General Education Elective	3
HEAL Elective HEAL 106 or HEAL 111	1

**TOTAL CREDITS** **73**



# machine tool and computer-aided manufacturing (MACH)

## **MACH 106 (3 credits)**

### **Blueprint Reading and Related Math**

Interpretation of industrial drawings, basic skills in sketching, and applied mathematics.

## **MACH 112 (3 credits)**

### **Cutting Tools and Measurement**

Procedures and techniques required to perform skilled bench work and use of precision measuring instruments. Variety of drill press, bench grinding, and power-sawing operations are introduced and exercised.

*Prerequisite:* MACH 106

## **MACH 118 (4 credits)**

### **Lathe and Vertical Milling Machining I**

This course introduces students to the lathe and vertical milling machine. Students are exposed to a wide variety of related operations.

*Prerequisite:* MACH 106

## **MACH 123 (2 credits)**

### **Surface Grinding and Abrasive Machining I**

Procedures and techniques required to safely set up and operate surface grinding equipment.

*Prerequisite:* MACH 106

## **MACH 158 (3 credits)**

### **Lathe and Vertical Milling Machining II**

Techniques and procedures taught in MACH 118 are enhanced and reinforced. This course introduces students to more advanced techniques and procedures used on the lathe and the vertical milling machine.

*Prerequisites:* MACH 106 and MACH 118

## **MACH 161 (2 credits)**

### **Metallurgy**

Covering the basic principles of metallurgy, this course clarifies many industrial processes. Students gain an understanding of quenching, annealing, case hardening, tempering, and crystallization.

## **MACH 168 (3 credits)**

### **Machine Skills Lab**

This is a lab intensive course which provides students with extensive hands-on training. Assigned projects aid students in gaining critical experience contributing to a well-rounded machining education.

*Prerequisites:* MACH 112, MACH 118, MACH 123, and MACH 158

## **MACH 172 (3 credits)**

### **Computer Numerical Control (CNC) I**

Introducing students to basic CNC concepts, this course explains and exercises Cartesian coordinates, codes, positioning systems, tooling, and word address programming.

*Prerequisite:* MACH 118

## **MACH 222 (3 credits)**

### **Computer-Aided Design and Computer-Aided Machining (CAD/CAM) I**

This course introduces the use of MasterCAM® as a tool for defining part geometry and generating CNC machine code. Two axis and three axis applications are demonstrated, along with the use of the CAD/CAM applications. The AutoCAD® system is introduced as a drafting system to be linked with MasterCAM®.

## **MACH 227 (3 credits)**

### **Computer Numerical Control II**

This course expands upon introductory concepts learned in CNC I and provides for increased hands-on application of learned material. Some advanced programming techniques include circular interpolation, cutter, compensation, and subroutines. Students learn how to inspect precision parts with the coordinate measuring machine and are required to complete specific laboratory work to gain confidence in working with the CNC machines.

*Prerequisite:* MACH 172

## **MACH 229 (4 credits)**

### **Machine Skills Lab II**

Students complete advanced project work on lathes and milling machines during laboratory time. On the lathe, advanced threading, boring, and the use of attachments such as steady and follower rests are studied. Preparing machined parts for heat-treating and required grinding are stressed and exercised in this course.

*Prerequisites:* MACH 168 and MATH 137

## **MACH 231 (4 credits)**

### **Machine Tool Internship**

The course is a prearranged, structured learning experience scheduled within a specific time frame. The experience is relevant to an intern's academic goals and to the competencies of this program. Machine Tool Technology internships serve as a capstone experience to the academic instruction received at Thaddeus Stevens College and provide interns with an opportunity to gain practical work experience in the machining industry.

*Prerequisites:* MACH 227, MACH 229, and instructor permission.

**MACH 267 (1 credit)**  
**Electrical Discharge Machining**

Both theoretical and practical application of electrical discharge machining are taught. Students learn how EDM machining is performed by individually setting-up, programming, and completing lab assignments on a wire EDM machine.

*Prerequisites: MACH 158 and MACH 161*

**MACH 272 (3 credits)**  
**Computer-Aided Design and Computer-Aided Machining (CAD/CAM) II**

This course teaches intermediate-level use of MasterCAM® as a tool for defining part geometry for both lathe and milling. Two-axis and three-axis applications are demonstrated along with the use of CAD/CAM applications. Three-dimensional surfacing and solids are taught.

*Prerequisite: MACH 222*

**MACH 276 (3 credits)**  
**Computer Numerical Control (CNC) III**

Provides students with additional time to perform specific advanced laboratory exercises in both programming and setup operations on the CNC equipment. Advanced concepts studied include CAM applications, cavity milling ramping, threading, and live tooling on the lathe. A manufacturing group project are completed that utilizes CAM and CNC.

*Prerequisite: MACH 227*

**MACH 277 (4 credits)**  
**Machine Skills Lab III**

This is a lab-based course and offers hands-on experience under work-like conditions. In-depth CNC and manual projects build on skills acquired in previous coursework. Students are required to perform operations on both CNC and manual equipment in order to complete lab assignments. Upon successful completion of this course, students should have the necessary skills to be employed as an entry-level machinist.

*Prerequisites: MACH 227 and MACH 229*

**MACH 278 (3 credits)**  
**Computer-Aided Design and Computer-Aided Machining (CAD/CAM) III**

This course teaches an intermediate level use of CAD/CAM software for generating code for use on multi-axis machine tools. Solid modeling will be introduced as a design tool as well as a method for generating NC code. This course will emphasize the connection between design and machine tool applications.

*Prerequisites: MACH 272*



# masonry construction technology

Masonry Construction Technology provides the opportunity to develop the skills of a proficient mason, from the simple spreading of mortar to the complex construction of an inside fireplace. These skills are developed by practice projects, which are preceded by theory lectures and demonstrations. Faculty members show films on various aspects of the trade, and students take field trips to learn about the manufacture of masonry products.

Since a large part of masonry work is decorative as well as functional, special emphasis is placed on appreciation of the beauty and permanence of brickwork and on the development of pride in good workmanship.

Students find employment in the field as masons, and with experience, as forepersons or superintendents. Many masons are self-employed.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Operate masonry tools and equipment safely and effectively.
- Use masonry terminology.
- Read blueprints to estimate materials quantity and pricing.
- Lay out and construct footings and build a block foundation.
- Apply brick veneering to a structure.
- Construct a masonry arch.
- Lay out and set ceramic tile.
- Construct an inside fireplace and chimney.
- Repair older masonry structures.
- Organize personnel and materials at a construction site.
- Provide all masonry options in current residential construction.



**Michael T. Gardner, Instructor**  
AAS: Thaddeus Stevens College of Technology

**Chad Hummel, Instructor**  
AAS: Thaddeus Stevens College of Technology



## **MODEL SCHEDULE FOR MASONRY CONSTRUCTION TECHNOLOGY**

### **SEMESTER 1**

MASN 101 Intro to Tools Safety and Equipment	3
MASN 105 Intro to Masonry Construction	3
MASN 110 Development of Masonry Materials	3
MASN 116 Chimney Construction	3
ENG 106 English Composition	3
MATH 126 Technical Mathematics I or higher	3

### **SEMESTER 2**

MASN 155 Block Construction, Bearings, & Anchoring Systems	4
MASN 158 Adhered Concrete Masonry Veneer	2
MASN 162 Hardscaping Patios & Retaining Walls	2
MASN 167 Masonry Restoration & Building Maintenance	3
MASN 171 Concrete Sidewalks	1
CIS 111 Intro to Computer Applications OR	3
CIS 105 Drawing with AutoCad	
MATH 137* or higher (Math 136 is an option)	3
HEAL 111 Basic First Aid	1

### **SEMESTER 3**

MASN 207 Advanced Masonry Applications	5
MASN 211 Planning and Management	2
MASN 216 Blueprint Reading and Estimating	4
ENG 221 Public Speaking, OR	
ENG 216 Technical Writing	3
Science Elective	3

### **SEMESTER 4**

MASN 256 Fireplace Construction	4
MASN 261 Arch Construction	3
MASN 266 Tile Setting	2
MASN 271 Footings and Foundations	3
Humanities Elective	3
BUSN 106 Small Business Management	3

**TOTAL CREDITS** **72**

# masonry construction technology (MASN)

## **MASN 101 (3 credits)**

### **Intro to Tools, Safety and Equipment**

Students will be introduced to the tools required for the masonry trade. Understand safety standards and practices. Receive training and certifications on various equipment used on a jobsite.

## **MASN 105 (3 credits)**

### **Introduction to Masonry Construction**

This course will teach the fundamentals of the masonry trade. This will include: spreading mortar and striking full joints, laying brick and block to the line, bonding the length and height of a wall, building leads, and hanging a corner pole.

## **MASN 110 (3 credits)**

### **Development of Masonry Materials**

History and the manufacturing of masonry materials. In the manufacturing of materials there are many different types of brick and block. You will learn their various names and where the material should be used in a wall. Portland cement comes in different forms and how to properly mix the different types. Students will learn what the different strengths of cement and where they should be used.

## **MASN 116 (3 credits)**

### **Chimney Construction**

Students will understand the difference between and be able to construct properly a single and double flue chimney.

## **MASN 155 (4 credits)**

### **Block Construction, Bearings, and Anchoring Systems**

Students will learn terminology; the placement of anchor bolts, bearing plates, setting lintels, cutting in electrical boxes and door ties. They will be working around conduit, duct work and rebar reinforcement. They will also build a composite wall using block and brick.

## **MASN 158 (2 credits)**

### **Adhered Concrete Masonry Veneer**

Students will learn the tools and equipment for installing veneer stone; applications of hanging wire, scratch coat, flashings, vapor barriers, drain mats, to hang stone and point the mortar joints. Students will learn the different types of patterns stone can be laid in.

## **MASN 162 (2 credits)**

### **Masonry Hardscaping Patios & Retaining Walls**

The proper use of masonry products in an outdoor environment. Understand the process to build an outdoor patio and retaining walls using masonry materials.

## **MASN 167 (3 credits)**

### **Restoration and Building Maintenance**

Cover the various materials that go along with masonry products. These would be; caulking, waterproofing, patching, repointing, cutting out and repairing damaged areas, and cleaning of masonry. This course will focus on preventive maintenance to stop any further damage of the masonry structure.

## **MASN 171 (1 credit)**

### **Concrete Sidewalks**

Students will learn how to build forms and placement of concrete for a sidewalk.

## **MASN 207 (5 credits)**

### **Advanced Masonry Applications**

Application of skills relative to masonry systems. Includes working on the off-campus housing project. Techniques include firewall construction, brick veneering, porch/ patio and step construction, and proper preparation for varying weather conditions.

## **MASN 211 (2 credits)**

### **Planning and Management**

Organizing personnel and materials on a job site; planning and coordinating the placement of equipment and materials; and completing a job on time and within budget. Supervisory duties and responsibilities are also covered.

## **MASN 216 (4 credits)**

### **Blueprint Reading and Estimating**

Basic skills to interpret residential construction drawings. Emphasis on calculation of materials, labor, and equipment necessary to complete selected projects. Proposals and closed bids required.

## **MASN 256 (4 credits)**

### **Fireplace Construction**

Provides history, theory, and function of the fireplace. Students design and construct a fireplace of their choice with emphasis on proper terminology, workmanship, and various components of different fireplaces.



**MASN 261 (3 credits)**  
**Arch Construction**

Provide the skills necessary to build various types of arches. Terminology, different types, and various techniques used in the construction of arches are taught.

**MASN 266 (2 credits)**  
**Tile Setting**

The basics of ceramic tile setting are covered. Emphasis is placed on terminology, tools, safety, and proper layout.

**MASN 271 (3 credits)**  
**Footings and Foundations**

Provides the opportunity to layout and construct a residential concrete block foundation. Topics include blueprint interpretation, materials estimating, installation of anchor bolts, partition construction, and the use of the transit for site layout.





# mechanical engineering technology

The Mechanical Engineering Technology program prepares graduates for entry-level employment in the Mechanical Engineering field. The skills acquired from this course of study allow the student to visualize objects in three dimensions, describe objects with manual and Computer-Aided Drafting (CAD) techniques, and apply Mechanical Engineering principles to design products, tools, and equipment for a manufacturing-oriented industry. The program's affiliations with industry are maintained through an Advisory Committee and the Society of Manufacturing Engineers (SME).

The student's skills are developed with a comprehensive exposure to the concepts of orthographic projection, sectioning, and isometric drawing with an emphasis on instrument drawing techniques. A thorough understanding of Geometric Dimensioning and Tolerancing (GD&T) and a demonstrated proficiency with the latest CAD software complement these skills. Additional training in Fabrication Principles, Mechanical Design, Product Design, and Manufacturing Processes provides a well-rounded experience with mechanical design and manufacturing technology.

The principles of Mechanical Engineering are mastered by studying the motion of mechanical objects and the underlying concepts required to understand how a machine functions or a manufacturing process is performed. By studying the practical aspects of structured programming, parametric feature-based design, and solid modeling, the student gains the skills necessary to utilize the computer as a design tool. Further studies in Fluid Mechanics, Production Design, Engineering Materials, Thermodynamics and Heat Transfer, Machine Design, and related engineering topics allow the student to build upon these concepts. Practical applications of these concepts are further realized as the student completes an internship project during the fourth semester.

Upon entering the work place, the graduate can expect to assist engineers and scientists in the design and development of new products. As work experience is acquired, the graduate can expect to gain more design responsibility and thereby become a key member of an engineering team.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Produce detail, subassembly, and full-assembly engineering drawings utilizing manual and computer-aided drafting techniques.
- Recognize and apply the ASME Y14.5 guidelines in the creation of engineering drawings.
- Utilize ASME Y14.5 geometric dimensioning and tolerancing guidelines for establishing and maintaining the functional fit of mating parts.
- Apply industrial practices in the design and fabrication of sheet-metal components, welded assemblies, and piping systems.
- Identify and understand manufacturing processes and their effect on the cost and/or function of manufactured products.
- Analyze and design mechanical parts and systems for static and dynamic loading conditions.
- Apply engineering principles for determining the effects of stationary and moving fluids and the control and transformation of energy.
- Design manufacturing tooling for locating, clamping, forming, piercing, blanking, and/or shaping a given part.
- Employ structured programming techniques and utilize computer software tools to design and analyze mechanical parts or systems.
- Select and apply engineering materials for use in the design and manufacture of mechanical components.
- Analyze and design machine elements such as gears, shafts, bearings, clutches, brakes, flywheels, and related assemblies.
- Apply engineering problem-solving skills to complete a project on time and within budget.



**William R. Chambers, Jr., PE, Professor**  
MME, BME: University of Delaware  
AAS: Thaddeus Stevens College of Technology  
Licensed Professional Engineer

**Amy Jo Mumma-Frank, Professor**  
BA: Elizabethtown College

## MODEL SCHEDULE FOR MECHANICAL ENGINEERING TECHNOLOGY (OPTION #1)

### SEMESTER 1

MET 101 Drafting Fundamentals	3
MET 106 Engineering Graphics	3
MET 116 Computer-Aided Drafting	3
MET 176 Manufacturing Processes	3
MATH 137 Intermediate Algebra	3
ENG 106 English Composition	3

### SEMESTER 2

MET 111 Engineering Standards	3
MET 161 Fabrication Principles	3
MET 166 Mechanical Design	3
MET 171 Product Design	3
MATH 141 Trigonometry	3
PHYS 113 Statics	3

### SEMESTER 3

MET 201 Engineering Mechanics	3
MET 206 Fluid Mechanics	3
MET 211 Production Design	3
MET 216 Parametric Solid Modeling	3
ENG 216 Technical Writing	3
PHYS 213 General Physics I	4

### SEMESTER 4

MET 261 Engineering Materials	3
MET 266 Thermodynamics	3
MET 271 Machine Design	3
MET 276 Engineering Seminar	3
Humanities Elective	3

### ADDITIONAL GENERAL EDUCATION REQUIREMENTS

ELECTIVE General Education Elective	3
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**TOTAL CREDITS** 73

## MODEL SCHEDULE FOR MECHANICAL ENGINEERING TECHNOLOGY (OPTION #2)

### SEMESTER 1

MET 101 Drafting Fundamentals	3
MET 106 Engineering Graphics	3
MET 116 Computer-Aided Drafting	3
MET 176 Manufacturing Processes	3
MATH 207 Pre-Calculus	4
ENG 106 English Composition	3

### SEMESTER 2

MET 111 Engineering Standards	3
MET 161 Fabrication Principles	3
MET 166 Mechanical Design	3
MET 171 Product Design	3
PHYS 113 Statics	3

### SEMESTER 3

MET 201 Engineering Mechanics	3
MET 206 Fluid Mechanics	3
MET 211 Production Design	3
MET 216 Parametric Solid Modeling	3
ENG 216 Technical Writing	3
PHYS 213 General Physics I	4

### SEMESTER 4

MET 261 Engineering Materials	3
MET 266 Thermodynamics	3
MET 271 Machine Design	3
MET 276 Engineering Seminar	3
Humanities Elective	3

### ADDITIONAL GENERAL EDUCATION REQUIREMENTS

ELECTIVE(S) General Studies Elective(s)	5
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**TOTAL CREDITS** 73

# mechanical engineering technology (MET)

## **MET 101 (3 credits)** **Drafting Fundamentals**

An introductory course in the basics of instrument drawing, lettering, geometric construction, and associated manual drafting techniques.

## **MET 106 (3 credits)** **Engineering Graphics**

A study of orthographic projection and the creation of engineering drawings with applications in sectioning and auxiliary views. This course also includes isometric drawing and practice in freehand sketching.

## **MET 111 (3 credits)** **Engineering Standards**

A study of the American Society of Mechanical Engineers (ASME) dimensioning guidelines including geometric dimensioning and tolerancing (GD&T) for the design and manufacture of interchangeable mechanical parts.  
*Prerequisites: MET 106, MET 116 (Both with final grade of C or higher or instructor permission)*

## **MET 116 (3 credits)** **Computer-Aided Drafting (CAD)**

An introduction to computer-aided drafting and its applications. The student will learn the fundamentals of using the computer operating system and the CAD program. These skills are affirmed with the completion of a series of mechanical drawings.

## **MET 161 (3 credits)** **Fabrication Principles**

A study of the industrial practices in the design and fabrication of sheet-metal components, welded assemblies, and piping systems.  
*Prerequisite: MET 116 (With final grade of C or higher or instructor permission)*

## **MET 166 (3 credits)** **Mechanical Design**

A study of power transmission fundamentals and design-related computations. Design applications include sizing and/or selection of belts, chains, gears, bearings, couplings, shafts, cams, linkages, and electric motors.

## **MET 171 (3 credits)** **Product Design**

The practical implementation of the mechanical design practices, engineering standards, and computer-aided drafting techniques as they relate to the design and fabrication of a manufactured product.  
*Prerequisites: MET 106, MET 116 (Both with final grade of C or higher or instructor permission)*

## **MET 176 (3 credits)** **Manufacturing Processes**

A comprehensive study of the processing of materials as it relates to manufacturing. In this course, class lectures and literature review will be combined with machine shop practice and plant visits to form a well-rounded understanding of the intricacies of manufacturing technology.

## **MET 201 (3 credits)** **Engineering Mechanics**

An introduction to the analysis of the static and dynamic forces which govern the behavior of structures and machines. The analytic skills in vector mechanics established in this course are employed for the design of structural components and assemblies as well as machine elements such as cams, gears, and linkages.

*Prerequisites: MATH 137, MATH 141, PHYS 113 (All with final grade of C or higher or instructor permission)*  
*Co-requisite: PHYS 213*

## **MET 206 (3 credits)** **Fluid Mechanics**

A study of the effects of stationary and moving fluids as it relates to the analysis and design of mechanical systems. Topics involving the volume and energy transfer of a working fluid are utilized to demonstrate the problems commonly encountered in industry.

*Prerequisites: MATH 137, MATH 141, PHYS 113 (All with a final grade of C or higher or instructor permission)*  
*Co-requisite: MET 201, PHYS 213*

## **MET 211 (3 credits)** **Production Design**

An introductory course in manufacturing engineering and lean production methods. Major topics include manufacturing processes, economics of production design, and design of manufacturing systems.

*Prerequisites: MET 176 (With a final grade of C or higher);*  
*Corequisite: MET 216.*

## **MET 216 (3 credits)** **Parametric Solid Modeling**

An intermediate computer-aided drafting course in three-dimensional, feature-based, parametric solid modeling with applications in the designing and detailing of mechanical components and assemblies. Applications include structured programming with practical applications in the creation and modification of solid models for complex parts, assemblies, and related engineering drawings.

*Prerequisite: MET 116 (With final grade of C or higher or instructor permission)*



**MET 261 (3 credits)**  
**Engineering Materials**

An introduction to the selection and utilization of engineering materials as they relate to their mechanical characteristics under various operating conditions. Material strength and failure criteria are utilized to identify design margins of safety for mechanical components.

*Prerequisites:* MET 176, ENG 106, ENG 216, PHYS 113, PHYS 213 (All with final grade of C or higher or instructor permission)

**MET 266 (3 credits)**  
**Thermodynamics**

An introduction to the principles which govern the control and transformation of energy. These principles provide a concise description of the processes that are common to boiler, refrigeration, and related systems.

*Prerequisites:* MET 206, PHYS 213 (Both with final grade of C or higher or instructor permission)

**MET 271 (3 credits)**  
**Machine Design**

A study of the design of machine elements such as gears, shafts, bearings, clutches, brakes, flywheels, and related assemblies. These concepts will be employed by the student through structural analysis of numerous machine elements.

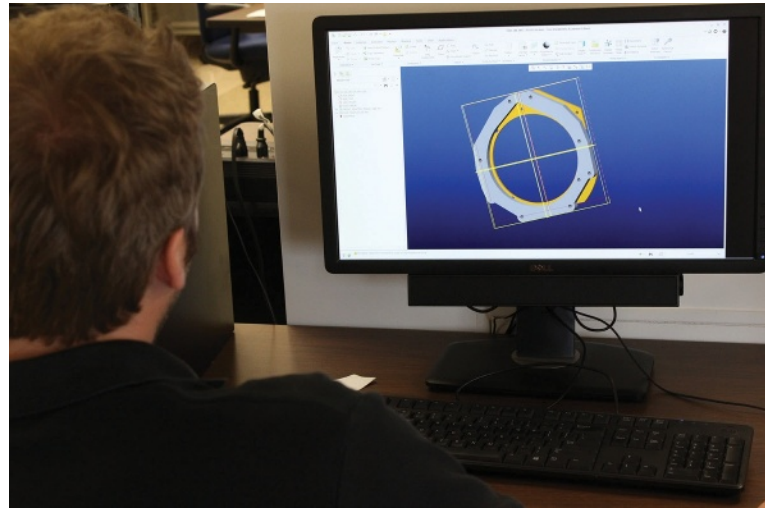
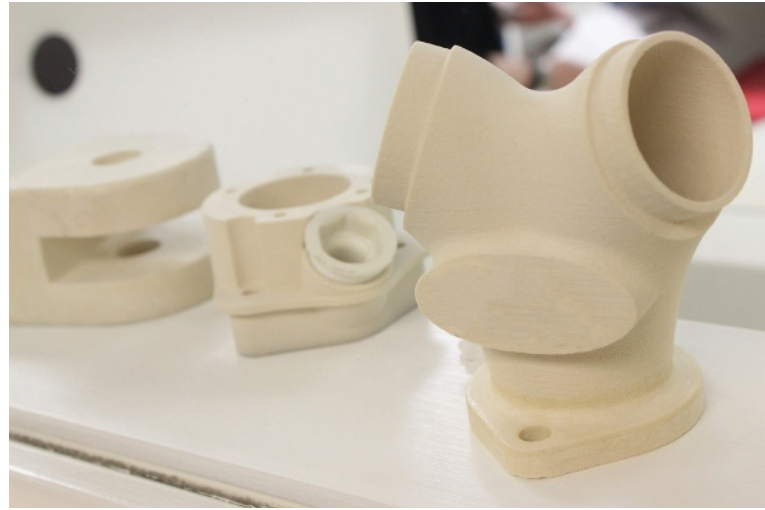
*Prerequisites:* MET 201, MET 216, PHYS 213 (All with final grade of C or higher or instructor permission)

**MET 276 (3 credits)**  
**Engineering Seminar**

A review course for the fundamentals of manufacturing including engineering economics and special topics of engineering technology. This course also covers engineering internship projects, technical presentations, and preparation for SME certification examination.

*Prerequisites:* MET 211, MET 216 (Both with final grade of C or higher or instructor permission)

*Co-requisites:* MET 261, MET 266, and MET 271



# metals fabrication & welding technology

Metals Fabrication and Welding Technology provides the student a working knowledge of the various tools, equipment and modern techniques used in the metals fabrication, mechanical installation and welding industries. The proper application of various layout, fabrication and assembly techniques for specific designs in sheet metal, plate, structural metals and pipe will be stressed. Students will design, estimate, fabricate and install projects relative to air handling systems, structural and miscellaneous fabricated systems. Proper and safe work habits must be developed due to the nature of the equipment necessary to be successful in the industry.

The understanding and mastery of layout techniques is an essential component for success in the Metals Fabrication and Welding fields. Therefore, disciplines in the basic, parallel line, radial line and triangulation methods of layout are covered. Also, instruction in blueprint reading relative to the manufacturing and construction industries will be required. Included are components in drafting, orthographic projection and symbol interpretation. Gas metal arc, shielded metal arc, gas tungsten arc, oxy-acetylene and flux core arc welding will be studied and practiced to allow students to obtain skills for a total understanding of fabricated projects from design through the final assembly processes.

Graduates of the Metals Fabrication and Welding Technology program are prepared to work in businesses and industries that design, build and install products that have been fabricated from sheet, plate and structural metals. Areas of employment include:

- H.V.A.C. Sheetmetal Duct Systems Fabrication and Installation
- Precision Sheetmetal Layout and Fabrication
- Welding
- Industrial Maintenance/Millwright
- Plate Layout/Fitter for Industrial Fabrication
- Mechanical Systems Estimator/Project Manager
- Fabrication Machinery Operator
- Equipment Manufacturing and Installation
- Structural Steel and Miscellaneous Iron Fabrication
- Automated Cutting Systems Operation Programming
- Sales - Industrial Equipment or Contractor
- Shop/Installation Foreman
- Fabrication of sanitary stainless steel products

- Food and Pharmaceutical processing applications
- Industrial Ventilation Fabrication and Installation

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate the ability to perform technical work related to welding, structural steel fabrication, sheet metal and plate fabrication, applying OSHA and other applicable safety standards to work safely.
- Apply concepts of geometry, trigonometry and physics to develop, layout, fit and weld various fittings, structures and systems associated with industrial and commercial metals fabrication.
- Identify and demonstrate correct use of various hand and power tools used in the fabrication industry.
- Demonstrate the ability to develop and interpret blueprints using excepted practices of orthographic projection.
- Determine set-up effectiveness of shop equipment and develop methods of manufacturing various products.
- Keep accurate records of project work, time expended, materials used and costs incurred associated with a given job.
- Demonstrate a comprehension of business practices related to the metals fabrication industry.
- Estimate the costs associated with the design, fabrication and installation of various structural, sheet metal or maintenance projects.
- Demonstrate basic oral communication skills, speak logically and use various types of oral and written communication techniques to promote good business relationships, to develop leadership, and to establish good employer, customer and employee relationships.
- Demonstrate competency in the simple, parallel line, radial line and triangulation methods of layout to develop elbows, transitions, and tees in both round and rectangular forms.
- Understand industry standards of quality.
- Demonstrate the ability to choose the proper materials, fabrication and welding procedures for given projects.
- Be prepared to except the challenges and responsibilities of the metals fabrication industry, knowing the full range of employment and advancement possibilities.

**James H. Bachman, Instructor**

AAS: Thaddeus Stevens College of Technology  
Occupational Safety and Health Administration (OSHA):  
construction safety and health certificate  
PA competency certificate  
Welding Instructor's Certificate: Hobart  
Institute of Welding Technology  
Gas Metal Arc Welding Certificate: Hobart  
Institute of Welding Technology  
Gas Metal Arc Welding Advanced Pipe Welding Certificate:  
Hobart Institute of Welding Technology  
The Pennsylvania State University Workforce  
Education Certificate

**Stacy Gillis, Instructor**

AAS: Thaddeus Stevens College of Technology

**Stephen E. Hower, Assistant Professor**

AAS: Thaddeus Stevens College of Technology  
Completion of Occupational Competency Exam: The  
Pennsylvania State University  
Completion of Welding Instructor Course:  
Hobart Institute of Welding Technology  
Certificate of Completion: Industrial Ventilation  
Conference,  
Michigan State University  
Occupational Safety and Health Administration (OSHA):  
Construction Safety and Health Certificate

**Jim Stewart, Instructor**

AAS Harrisburg Area Community College  
BS Franklin University

**MODEL SCHEDULE FOR  
METALS FABRICATION & WELDING TECHNOLOGY**

**SEMESTER 1**

MFWT 106 Gas Metal Arc Welding/Plasma Arc Cutting	3
MFWT 111 Metals Fab I – Intro to Hand & Machine Processes	3
MFWT 121 HVAC Duct Design and Fabrication	3
MFWT 126 Drafting Fundamentals	3
MATH 126 Technical Mathematics I OR higher	3
CIS 111 Intro to Computer Applications	3

**SEMESTER 2**

MFWT 156 Oxy-Acetylene Welding and Cutting	2
MFWT 161 Metals Fabrication II – Parallel Line Development Machine Processes	3
MFWT 166 Industrial Applications/Fabrication Blue Print Reading	3
MFWT 171 Materials of the Trade/Applied Metallurgy	2
MATH 132 Geometry or higher	3
CIS 105 Drawing with Auto Cad	3

**SEMESTER 3**

MFWT 207 Shielded Metal Arc Welding	4
MFWT 212 Metals Fabrication III – Triangulation Pattern Machine Processes	4
MFWT 222 CNC Applications and Estimating	4
Physics Elective PHYS101, PHYS106, PHYS 113, or PHYS213	3
ENG 106 Composition	3

**SEMESTER 4**

MFWT 257 Gas Tungsten Arc Welding	4
MFWT 262 Metals Fabrication IV	4
MFWT 267 Industrial Apps III – Print Reading for Welding	4
ENG 216 Technical Writing	3
ELECTIVE Humanities Elective	3

**ADDITIONAL GENERAL EDUCATION REQUIREMENTS**

HEAL Elective HEAL 106 or HEAL 111	1
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<b>TOTAL CREDITS</b>	<b>71</b>
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# metals fabrication and welding technology (MFWT)

## **MFWT 106 (3 credits)**

### **Gas Metal Arc Welding/Plasma Arc Cutting**

Provides a thorough technical understanding of welding safety, gas metal arc welding fundamentals, gas metal arc equipment adjustments, metal transfer, and shielding gases. Provides training to develop the manual skill necessary to make high quality gas metal arc welds in all positions on mild steel from 1/16" to 3/8" thickness with single and multiple passes, using short circuit transfer.

## **MFWT 111 (3 credits)**

### **Metals Fabrication I: Introduction to Hand and Machine Processes**

Introduction to tools, materials, and equipment required to fabricate basic sheet metal projects. Students develop an understanding of seaming, hemming, and fastening techniques. Safety standards according to Occupational Safety and Health Administration (OSHA) are covered.

## **MFWT 121 (3 credits)**

### **HVAC Duct Design and Fabrication**

Teaches how to properly design and fabricate duct systems relative to low-pressure HVAC systems. Machinery, seaming, connecting, and basic layout techniques are covered. Course includes the interpretation of applicable Sheet Metal and Air Conditioning Contractors National Association (SMACNA) codes for duct construction.

*Prerequisite: MFWT 111*

## **MFWT 126 (3 credits)**

### **Drafting Fundamentals**

Introduction to drafting and sketching techniques. Major topics include geometric construction, drafting equipment, and orthographic projections. Mechanical drawing required.

## **MFWT 156 (2 credits)**

### **Oxy-Acetylene Welding, Cutting, and Brazing**

Offers a technical understanding of oxy-acetylene welding, flame cutting, brazing fundamentals, and welding safety. Training for manual skill necessary to produce high quality welds on mild steel in all positions. Manual and mechanized flame cutting and brazing mild steel also included.

*Prerequisite: MFWT 111*

## **MFWT 161 (3 credits)**

### **Metals Fabrication II: Parallel Line Development and Machine Processes**

Instruction in the use of precision measuring tools and saws. Use of parallel line method of pattern development for fabrication of elbows, tees, and offsets using sheet metal, pipe, and plate materials are covered.

*Prerequisite: MFWT 111*

## **MFWT 166 (3 credits)**

### **Industrial Applications I: Fabrication Blueprint Reading**

Discusses the equipment used in the various fabrication and welding trades, such as sheet and plate products plus structures, tubing, pipe, and the various alloys of steel, aluminum and stainless steel. Included is the application of metals for industrial, commercial, and manufacturing design.

*Prerequisite: MFWT 111*

## **MFWT 171 (2 credits)**

### **Materials of the Trade and Applied Metallurgy**

Covers the common materials, designations, and methods of measurement used in the various fabrication and welding trades. Sheet and plate products plus structures, tubing, pipe, and the various alloys of steel, aluminum, and stainless steel are discussed.

## **MFWT 207 (4 credits)**

### **Shielded Metal Arc Welding**

Provides students with a thorough technical understanding of shielded metal arc welding fundamentals, welding safety, welding machines, and electrode classifications and selections. It also provides training to develop the manual skill necessary to produce high quality shielded metal arc welds in all positions on mild steel from 16 gage to 1" plate with single and multiple passes. The welding process using mild steel electrodes with low hydrogen and iron powder flux coatings while using AC and DC power sources is covered.

*Prerequisite: MFWT 156*

## **MFWT 212 (4 credits)**

### **Metals Fabrication III: Triangulation Pattern**

Developmental and Advanced Machine Processes Designed to introduce students to the triangulation method of pattern development. Using this discipline of pattern development, students design, lay out, and fabricate transitions, Y-branches and other irregular fittings related to sheet metal, piping, and miscellaneous plate fabrication according to job specifications. Students also learn advanced machinery set-up techniques relative to the fabrication of components designed using this layout process. Instruction in the use of precision measuring tools, iron workers, press brakes, and saws are also major topics covered.

*Prerequisites: MFWT 111 and MFWT 161*

**MFWT 222 (4 credits)****Industrial Applications II: CNC Applications and Estimating**

The major objective of this course is to introduce students to aspects of programming and utilizing computer-controlled plasma and oxy-fuel cutting systems. Students use AutoCAD® and MTC ProNest software packages to produce duct, weldment, and miscellaneous profile parts from blueprints, sketches, and field measurements. Programmed parts are then nested and cut on given sheet or plate sizes using state-of-the-art computer numerical control (CNC) systems or plasma cutting system. Layout techniques previously learned for profile programming jobs are utilized. Other topics covered in this course are project management and estimating.

*Prerequisites: MFWT 161 and CIS 105*

**MFWT 257 (4 credits)****Gas Tungsten Arc Welding**

Provides students with a thorough understanding of gas tungsten arc welding fundamentals, arc characteristics, and welding safety. It provides training to develop the manual skill necessary to make high quality gas tungsten arc welds in all positions on 16- and 11-gage mild steel, 16- and 11-gage aluminum, also 16-gage stainless steel using both alternating and direct current. In addition, material is presented on the weld characteristics of carbon steel, stainless steel, and aluminum. The use of abrasives and other clean-up techniques to produce quality USDA and FDA finishes is covered. Instruction on the use of purging is also given.

*Prerequisite: MFWT 156*

**MFWT 262 (4 credits)****Metals Fabrication IV: Radial Design Development and Machine Processes**

This course is designed to instruct students in the use of the radial line method of pattern development. Students lay out and fabricate various sheet metal and plate fittings such as cones, reducers, and take-off branches using this technique. Fittings are then welded using processes previously learned.

*Prerequisite: MFWT 111*

**MFWT 267 (4 credits)****Industrial Applications III: Print Reading for Welding/Field Equipment and Rigging**

Selected on- and off-campus projects utilized to reinforce previous instruction. Opportunity to study and evaluate projects to learn various aspects of industry. Applicable codes and standards used to insure proper design and applications of materials and processes are covered. Also included are the interpretation of welding blueprints and applications in field equipment and rigging.

*Prerequisite: MFWT 166*



# plumbing technology

Students in the Plumbing Technology program learn how to design, install, and repair residential and commercial plumbing systems and hydronic heating systems. Some of the skills acquired are joining different types of piping materials, reading blueprints, and installing and repairing boilers, plumbing fixtures, faucets, and water heaters.

Employment opportunities in the plumbing and pipe-fitting industries include the installation of plumbing and heating systems in new buildings and the installation and maintenance of plumbing, heating, and piping systems for industries, public utilities, or government agencies. Self-employment is another option. Many graduates become self-employed plumbers after completing their apprenticeships.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Apply safety principles and demonstrate good work habits in the trade.
- Use the hand and power tools of the trade.
- Identify piping materials and install them using proper connections.
- Use and apply trade terms and technical data.
- Read and interpret blueprints, specifications, and codes as they apply to the trade.
- Lay out, estimate, calculate, and use mathematical skills as required in the trade.
- Install, maintain, and repair plumbing, heating, and mechanical systems and equipment.
- Keep abreast of new developments in the field.
- Demonstrate the ability to write letters of application, memos, work orders, reports, and apply communication skills in the world of work.



**Vincent J. Skimski, Instructor**

Master Plumber

Member of the City of Reading, PA Plumbing Board

American Society for Sanitary Engineering (ASSE):  
certified

back flow tester

Torch brazing procedure for medical gas installation  
certificate

Gastite, TracPipe, and Perfection Permasert piping  
applications certificates

ICC Plumbing Inspector

PA State competency certified

Spears ASME certified PVC solvent weld pipe

Uponor PEX certified

**Jo Tyndall, Instructor**

AAS: Thaddeus Stevens College of Technology

Master Plumber

Gastite Piping Application Certificate

Torch brazing procedure for medical gas installation  
certificate

**MODEL SCHEDULE FOR PLUMBING TECHNOLOGY****SEMESTER 1**

PLBG 106 The Plumbing Trade	1
PLBG 111 Plumbing Design I	2
PLBG 116 Plumbing Installation I	7
PLBG 121 Construction Blueprint Reading	2
MATH 126 Technical Mathematics I(or higher)	3
ENG 106 English Composition	3
HEAL 111 Basic First Aid	1

**SEMESTER 2**

PLBG 156 Plumbing Design II	3
PLBG 161 Plumbing Installation II	5
PLBG 166 Plumbing Service I	2
MATH Elective	3
CIS 111 Intro to Computer Applications	3

**SEMESTER 3**

PLBG 206 Plumbing Design III	2
PLBG 211 Plumbing Installation III	4
PLBG 216 Plumbing Installation IV	3
PLBG 221 Plumbing Service II	1
Science ELECTIVE	3
BUSN 106 Small Business Management	3

**SEMESTER 4**

PLBG 256 Plumbing Design IV	3
PLBG 261 Plumbing Installation V	4
PLBG 266 Plumbing Service III	2
PLBG 271 Plumbing Installation VI	2
ELECTIVE General Education Elective	3
ELECTIVE Humanities Elective	3

<b>TOTAL CREDITS</b>	<b>68</b>
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# plumbing technology (PLBG)

## **PLBG 106 (1 credit)**

### **The Plumbing Trade**

Prepares students for their role in the Plumbing Technology program at Thaddeus Stevens College and for their future in the field. Examines organizational skills, safe work habits, and proper work attitude. Surveys the history of plumbing while also offering an examination of job opportunities and an analysis of steps in career progressions.

## **PLBG 111 (2 credits)**

### **Plumbing Design I:**

Introduction to Plumbing Systems Study of potable water, methods of sewage disposal, components of plumbing systems, and basic physics as related to plumbing.

*Prerequisite: PLBG 200*

## **PLBG 116 (7 credits)**

### **Plumbing Installation I Plumbing Tools and Materials**

Familiarizes students with the proper selection and use of all the basic tools (hand tools, power tools, and torches) and materials (cast iron, steel, copper, plastics, and others) of the plumbing and pipefitting trades.

## **PLBG 121 (2 credits)**

### **Construction Blueprint Reading**

Introduces students to construction prints and documents. Basic drawing symbols and line forms are explained, and the course covers the use of basic drawing tools, dimensioning, and single line pipe drawing methods and practices.

## **PLBG 156 (3 credits)**

### **Plumbing Design II: Blueprint Reading**

Focus on residential piping system design. Skills covered include the following: designing systems; reading blueprints; making orthographic and isometric pipe sketches and drawings; sizing potable water systems; sizing DWV systems; and sizing natural gas systems.

*Prerequisite: PLBG 121*

## **PLBG 161 (5 credits)**

### **Plumbing Installation II: Residential Plumbing Installation**

Discusses the installation of residential piping systems, bathroom/kitchen fixtures, and water heaters.

*Prerequisites: PLBG 111 and PLBG 116*

## **PLBG 166 (2 credits)**

### **Plumbing Service I: Introduction to Plumbing Service**

Focuses on the selection and use of tools and procedures for servicing and repairing plumbing systems. Skills include troubleshooting and repairing faucets and valves, leaking pipes, clogged drains, and toilets.

*Prerequisite: PLBG 161*

## **PLBG 206 (2 credits)**

### **Plumbing Design III: Plumbing Codes**

By examining the 2009 International Plumbing Code, this course prepares students to design, install, and maintain plumbing systems in compliance with this statewide code. The course features the proper use of materials and fittings, correct venting, methods for testing plumbing systems, and the sizing of potable water, drainage waste and vent, storm water drainage, and natural gas piping systems.

*Prerequisites: PLBG 156 and PLBG 161*

## **PLBG 211 (4 credits)**

### **Plumbing Installation III**

An advanced residential plumbing course that is basically concerned with the plumbing of the housing project. Shop practice is made available as needed, but most instruction occurs at the housing project.

*Prerequisite: PLBG 206*

## **PLBG 216 (3 credits)**

### **Plumbing Installation IV: Commercial Plumbing Installation**

Covers the design and installation of compressed air piping systems, storm water drainage systems, specification fittings and fixtures, and commercial sanitary drainage and venting, and potable water systems. Students learn to read commercial blueprints and to acquire information from specification literature, applying this information in developing the capstone project, a complete and functioning commercial toilet room facility.

*Prerequisite: PLBG 161*

## **PLBG 221 (1 credit)**

### **Plumbing Service II: Advanced Plumbing Services**

An extension of PLBG 166. Covers the tools and procedures to repair flushometer valves, water heaters, frozen pipes, water hammer, and backflow.

*Prerequisite: PLBG 166*

**PLBG 256 (3 credits)****Plumbing Design IV: Designing Hydronic Heating Systems**

Designing and sizing hydronic heating systems is taught. Includes the calculation of heat loss.

*Prerequisite: PLBG 156*

**PLBG 261 (4 credits)****Plumbing Installation V: Installing Hydronic Heating Systems**

Students learn the proper installation of residential and commercial hot water heating systems.

*Prerequisite: PLBG 116*

**PLBG 266 (2 credits)****Plumbing Service III: Servicing Hydronic Heating Systems**

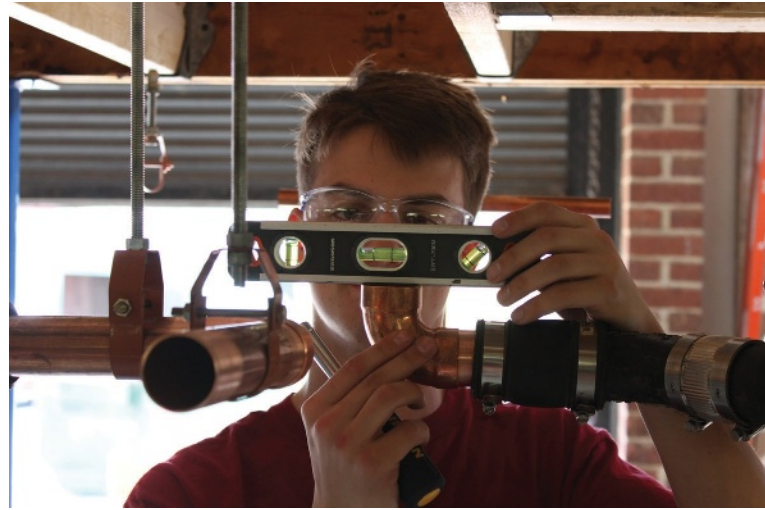
Heating service, including repair of hot water circulation problems, combustion testing, oil burner, and gas burner repair, boiler clean-up, and system troubleshooting are covered.

*Prerequisite: PLBG 116*

**PLBG 271 (2 credits)****Plumbing Installation VI**

Includes hands-on experience and training in the installation of plumbing fixtures, appliances, and the finished piping in a permanent structure. Work is done on the housing project and other appropriate projects around the campus.

*Prerequisite: PLBG 211*





# residential remodeling

Residential remodeling has become an essential part of the construction industry. Remodelers add living space to existing homes and retrofit homes to modern conveniences and updated building codes. Remodeling can be done not only for cosmetic purposes but also for structural reasons, as well as to increase the energy efficiency of older homes.

Jobs available in the residential remodeling field include but are not limited to carpenters; painters; drywall and ceiling tile installers; roofers; woodworkers; kitchen and bath remodelers; siding, roofing, and aluminum installers; and flooring specialists.

Upon graduation, students of the Residential Remodeling program will have a number of different opportunities available. In addition to working in their field, graduates will also have the chance to continue their education in areas such as project management, technical education, residential designer, civil engineering, and structural engineering degrees. Advanced opportunities as crew leaders, supervisors, assistant supervisors, superintendents and small business owners may also be possible for graduates of the program.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Understand the history of residential buildings in the 20th and 21st centuries.
- Demonstrate basic carpentry woodworking skills.
- Demonstrate successful use of basic and advanced tools of the profession.
- Read blueprints to lay out projects necessary to complete tasks.
- Calculate material quantities and estimate time allowances for projects using mathematical skills required in the profession.
- Apply remodeling skills necessary for interior, exterior, kitchen, and bathroom projects.
- Operate masonry tools and equipment safely and effectively.
- Complete basic masonry repairs.
- Identify and rectify basic plumbing problems in an existing dwelling.
- Troubleshoot basic electrical circuits found in a dwelling.
- Practice safety in the lab and on-site environments.
- Demonstrate a strong work ethic and the ability to work both independently and as a contributing member of a team.
- Stay current with any new technology or codes related to remodeling.

**Loren Bishop, Instructor**  
BS: Eastern University.

**Charles T. Byers, Assistant Professor**  
AAS: Thaddeus Stevens College of Technology  
FHA/VA Certificate Builder  
NCCER Certified Instructor Carpentry Level 4  
OSHA Certified Outreach Instructor



## **MODEL SCHEDULE FOR RESIDENTIAL REMODELING**

### **SEMESTER 1**

RMDL 106 Remodeling Hand & Power Tools	3
RMDL 111 Building Materials and Anatomy	3
CARP 116 Building Site and Foundations	3
CARP 182 Blueprint Reading	3
MATH 126 Technical Mathematics I(or higher)	3
ENG 106 English Composition	3

### **SEMESTER 2**

CARP 157 Floor, Wall, and Ceiling Framing	3
CARP 161 Stair Construction & Remodeling	2
CARP 166 Roofing & Exterior Finishes	3
CARP 177 Interior Trim & Finishes	3
MATH 132 Elementary Geometry or Higher	3
CIS 111 Intro to Computer Applications	3

### **SEMESTER 3**

RMDL 205 Remodeling Drafting & Design	2
RMDL 210 Demolition & Stabilization	2
RMDL 215 Estimating & Scheduling	2
RMDL 220 Electro-mechanical Systems	3
RMDL 250 Insulation & Weatherization	2
Science ELECTIVE	3
BUSN 106 Small Business Management	3

### **SEMESTER 4**

CARP 272 Site work and Foundations II	2
RMDL 260 Kitchen & Bath Remodeling	3
RMDL 270 Advanced Interior Finishes	3
RMDL 280 Advanced Exterior Finishes	3
HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE General Education Elective	3
ENG English Elective	3

### **TOTAL CREDITS**

**68**

# residential remodeling technology (RMDL)

## **RMDL 106 (3 credits)** **Hand Tools and Power Tools**

This course is a general introduction to the basic tools that are used by a carpenter with an emphasis on safety, proper usage and procedures, and various applications that are most commonly used in the carpentry trades.

## **RMDL 111 (3 credits)** **Building Materials**

This course covers the wide range of building materials used in carpentry, from the many different types of wood products used to the newest technology of steel framing. Proper procedures for estimating these building materials to the variety of fastening methods are also covered. Building anatomy from the 1940s and prior up to and including present is discussed.

## **CARP 116 (3 credits)** **Building Site and Foundations**

In this course, students learn how to set up and operate the transit level and laser level. Building layout and excavation of residential construction will be explained, with particular emphasis on building stake-off. Types of footers, foundations, and concrete forming are also explored. Students will be challenged to practice proper building site layout, constructing concrete stair and sidewalk forms, and installing the form-a-drain system.

## **CARP 182 (3 credits)** **Blueprint Reading**

In this course students will learn the proper techniques necessary to dissect a set of residential blueprints and develop a broad understanding of the language of construction drawings. We will also become involved in duplicating, through the process of mechanical architectural drafting, a few select detailed residential section drawings, with each having different drafting scales.

## **CARP 157 (3 credits)** **Floor, Wall, and Ceiling Framing**

With a strong emphasis on platform framing, students will examine and demonstrate the proper methods of constructing subfloors, walls, and ceilings in the framework of residential and light commercial construction. This includes discussing the basic components and construction methods of light-gauge steel framing.

## **CARP 161 (2 credits)** **Stair Construction and Remodeling**

Students learn the different types of stairways and all parts pertaining to them. They also learn how to calculate, lay out, and construct stairway stringers with their proper landings, risers, treads, and railings.

## **CARP 166 (3 credits)** **Roofing and Exterior Finishes**

The different types of roof systems and all the material members that are involved in the different roof types are discussed. Students learn theoretically how to calculate rafters to fit their proper situations and practice laying out and cutting common and hip rafters. In addition, students are introduced to various exterior finishing with a focus on vinyl siding.

## **CARP 177 (3 credits)** **Exterior and Interior Finish**

In this course, students will study and practice installing various types of exterior and interior finish material for residential construction. For exterior finish, we will give special attention to the proper installation procedures for: roofing; siding; soffit; windows and doors; and aluminum trim. For interior finish, strong emphasis will be placed on proper techniques for: hanging drywall; installing prehung doors and door trim; applying trim around a window unit; and other common trim materials.

## **RMDL 205 (2 credits)** **Remodeling Drafting and Design**

This course covers the principles of drafting and design for remodeling purposes. Particular emphasis be placed on documenting the existing structure where it meets the new construction, including kitchens, baths, utilities, and all mechanicals. Create sketches and working drawings that follow design constraints and a systematic renovation sequence.

*Prerequisite: CARP 182*

## **RMDL 210 (2 credits)** **Demolition and Stabilization**

This course covers the principles of proper techniques used for demolition and stabilizing structures during the remodeling process. It covers the safe use of tools and equipment and salvaging existing materials for reuse.

*Prerequisite: CARP 156*

## **RMDL 215 (2 credits)** **Estimating and Scheduling**

This course covers the principles of fundamental estimating and scheduling skills. Microsoft Excel® is used to establish estimating and scheduling procedures associated with a remodeling project. Cross-disciplinary estimating and inspection processes that will be necessary during the project are both addressed.

*Prerequisites: CARP 111 and CIS 111*



**RMDL 220 (3 credits)**  
**Remodeling Electro-Mechanical Systems**

This course provides a general introduction to electro-mechanical systems in a residential structure and how to modify these systems during the renovation process. Students learn how to safely and properly re-route basic electrical, plumbing, and HVAC ducts that are regularly encountered when remodeling a building. Emphasis is placed on when the scope of the work requires a sub-contractor to perform the work.

**RMDL 250 (2 credits)**  
**Installation and Weatherization**

This course covers the various types of products for reducing building heat loss by infiltration and conduction and the use of insulation used for noise and fire protection. Types of ventilation baffles, vapor barriers, infiltration barriers, and types of insulation is covered. Students perform installation of insulation materials for wall, ceilings, floors, and fire stop applications.

*Prerequisites: CARP 176 and RMDL 220*

**RMDL 260 (3 credits)**  
**Kitchen and Bath Remodeling**

This course covers the details and techniques used for residential remodeling and restoration of kitchens and baths. Students are exposed to a wide variety of products and the appropriate match for existing conditions. Emphasis is on demolition of existing space and the acceptable design of the new space.

*Prerequisite: RMDL 250*

**RMDL 270 (3 credits)**  
**Advanced Interior Finishes**

This course covers the details and applications of various interior painting and finishing and materials integrated to match renovation work with the existing building. The proper wood types and species, finishing methods, and applications are utilized. Details of interior pre-hung doors, window stools, extension jambs, and casing are covered. Students perform the installation of a complete custom interior trim package.

*Prerequisite: CARP 176 with a minimum grade of "C" or instructor permission*

**RMDL 280 (3 credits)**  
**Advanced Exterior Finishes**

This course covers the principles and practices of exterior finishes including roofing, siding, and aluminum trim applications.

*Prerequisite: CARP 166*



# water & environmental technology

The Pennsylvania Department of Environmental Protection requires that operators of drinking water and wastewater treatment facilities are certified. Certification is obtained through a combination of exams and operating systems. The completion of an approved associate degree program significantly reduces the number of years of operating experience required for certification. Students in the Water and Environmental Technology program gain the knowledge, skills, and abilities necessary for successful completion of Department of Environmental Protection examinations.

Courses in the Water and Environmental Technology program are designed to meet the knowledge, skills, and ability requirements tested on the Pennsylvania Department of Environmental Protection certification exams. This will include courses covering topics such as water and wastewater treatment; water distribution and wastewater conveyance systems; geographical information systems (GIS); equipment maintenance; solids handling; basic electricity; plant administration; and rules and regulations.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Describe the major processes, equipment, instrumentation, laws, and regulations associated with the collection and treatment of wastewater.
- Describe the major processes, equipment, instrumentation, laws, and regulations associated with the conveyance and treatment of potable water.
- Perform water and wastewater calculations involving flow, volume, surface area, disinfection, solids removal, retention time, and chemical feed rates.
- Analyze and improve operational
- procedures at water treatment and wastewater treatment facilities.
- Prepare, analyze, interpret, and report results of water and wastewater sample testing.
- Maintain a safe working environment as outlined by federal and state regulations.
- Describe the Safe Water Drinking Act and its implementation.
- Identify and describe the common diseases associated with water supply and sewage.
- Demonstrate the monitoring duties of water treatment operators.
- Describe the areas of safety to be considered in water treatment, storage, and laboratory testing.
- Describe the operation, components, and troubleshooting procedures for motors and electrical circuits.
- Determine and employ optimization strategies for water treatment and wastewater treatment processes and treatment facilities.

**William McKeon, PE, Instructor**

MS: Manhattan College  
MS: Fordham University  
BS: Manhattan College  
Licensed Professional Engineer  
Wastewater Treatment Operator certified

**Kathleen E. Surra, Instructor**

MEng, BSc: Queens University  
PA Department of Environmental Protection certified  
drinking water operator  
Authorized OSHA general industry training provider



**MODEL SCHEDULE FOR  
WATER & ENVIRONMENTAL TECHNOLOGY**

**SEMESTER 1**

WET 111 Drinking Water Distribution	3
WET 116 Water Resources	4
WET 156 Drinking Water I	4
MATH 126 Technical Math I -or- higher	3
ENG 106 English Composition	3

**SEMESTER 2**

WET 106 Waste Water Collection	3
WET 121 Safety, Health, and Security	2
WET 161 Waste Water I	4
WET 166 Administration/Rules & Regulations	2
MATH 136 Technical Math II -or- higher	3
CHEM 100 Conceptual Chemistry	4

**SEMESTER 3**

WET 206 Waste Water II	5
WET 211 Print Reading/GIS	3
WET 216 Industrial Waste	3
BIO 210 General Biology	4
CIS 111 Intro to Computer Applications	3

**SEMESTER 4**

WET 256 Drinking Water II	4
WET 261 Advanced Waste Water and Solids Handling	4
WET 266 Equipment Maintenance	3
HEAL Elective HEAL 106 or HEAL 111	1
ELECTIVE Humanities Elective	3
ENG Tech Writing or Public Speaking	3

**TOTAL CREDITS 70**



# water and environmental technology (WET)

## **WET 106 (3 credits)** **Wastewater Collection**

This course provides students with an introduction to the practical aspects of operating and maintaining wastewater collection systems with a focus on the knowledge and skills operators need to identify collection system problems and select appropriate methods to solve them. Students learn the components and typical layouts of collection systems, and be introduced to safety procedures for construction, inspection, and testing of sewers, inspection of manholes, and underground construction and repair. Students learn the basics of closed-circuit television inspections, clearing stoppages, cleaning sewers, and controlling roots, grease, odors, and corrosion in collection systems, and learn to solve arithmetic problems relating to the operation and maintenance of wastewater collection systems.

## **WET 111 (2 credits)** **Drinking Water Distribution**

Students learn about the practical aspects of operating and maintaining water distribution systems, emphasizing safe practices and procedures, including the role and duties of water distribution system operators, procedures for operating and maintaining clear wells and storage tanks, and components and characteristics of distribution system facilities. The course covers the basics of operating and maintaining distribution systems, maintaining water quality in the system, disinfecting new and repaired facilities as well as water delivered to consumers. Techniques for recognizing hazards and developing safe procedures and programs is also taught.

## **WET 116 (4 Credits)** **Water Resources**

Introducing students to topics such as the properties of water, water resources management, sources of water, management of storm water, and water quantity and quality requirements, this course provides an understanding of the characteristics of surface water and groundwater sources and examines the impacts of urbanization on runoff. Students discuss the relationship between the hydrological cycle and the treatment of water and wastewater and gain hands-on experience through laboratory exercises, case studies, and field trips, as appropriate.

## **WET 121 (2 credits)** **Safety, Health, and Security**

An introduction to safety, health, and security procedures to address the hazards and risks associated with operating and maintaining water and wastewater systems. Students learn about industry accepted safety practices to provide the workforce with a safe working environment. Students

learn to identify and predict hazards in the work environment and learn proper use of personal protective equipment. The biological and chemical hazards associated with operating treatment facilities is also covered. Students are introduced to safety and emergency preparedness and the importance of coordinating activities with other agencies.

## **WET 156 (4 credits)** **Drinking Water I**

An introduction to the equipment and processes used in the treatment of drinking water, the course introduces students to different sources of water, reservoir management, and intake structures. Students learn how to safely operate and maintain coagulation, flocculation, sedimentation, filtration, and disinfection processes. Topics such as the control of tastes and odors in drinking water, the Lead and Copper Rule, and solving arithmetic problems related to water treatment plant operations are also covered. Students are introduced to daily operating procedures, regulation of flows, chemical use and handling, records and reports, plant maintenance, safety and security, emergency conditions and procedures, handling complaints, and energy conservation.

## **WET 161 (4 credits)** **Wastewater I**

The course serves as an introduction to the equipment and processes used in the treatment of wastewater. Students are introduced to the different components of wastewater treatment facilities, including racks and screens, grit removal, sedimentation and floatation, trickling filters, rotating biological contactors, activated sludge, wastewater stabilization ponds, and disinfection. Topics such as why we treat wastewater, the duties of a wastewater treatment plant operator, and NPDES permits are also introduced.

*Prerequisite: WET 106*

## **WET 166 (2 credits)** **Administration/Rules and Regulations**

Covering the major areas of responsibility of a utility manager, the course also includes the legal requirements of federal legislation such as the Americans with Disabilities Act (ADA), the importance of developing policies and procedures for dealing with harassment, grievances, and violence in the workplace. Students also discuss the financial management of a utility, including assessing the financial strength and stability of the utility, budgeting, and funding capital improvements. Finally, the course introduces students to the Pennsylvania Department of Environmental Protection regulations governing water and wastewater treatment facilities.

**WET 206 (5 credits)**  
**Wastewater II**

Building upon the topics covered in WET 161, the course covers conventional activated sludge processes, sludge digestion and basic solids handling, effluent disposal, plant safety and good housekeeping, plant and equipment maintenance, laboratory procedures and chemistry, use of computers for plant operation and maintenance, analysis and presentation of data, and records and report writing. Operators also learn to analyze and solve operational problems and to perform mathematical calculations relating to wastewater treatment process control. A laboratory component allows students to gain hands-on experience.

*Prerequisite: WET 161*

**WET 211 (3 credits)**  
**Print Reading/Geographical Information Systems (GIS)**

This course introduces students to blueprint reading, geographical information systems (GIS), and the types of blueprints students may expect to encounter working in the water and wastewater industries. This includes land development prints and water and wastewater treatment facility prints. The GIS portion of the course introduces students to GIS mapping as it relates to municipal services.

**WET 216 (3 credits)**  
**Industrial Waste**

Topics include the operation and maintenance of industrial wastewater treatment facilities, regulations governing industrial waste, types of industrial waste, operation and maintenance of flow measurement equipment, preliminary treatment processes, physical-chemical treatment processes, and physical treatment processes. Students are also introduced to the treatment of metal waste streams.

*Prerequisite: WET 106*

**WET 256 (4 credits)**  
**Drinking Water II**

The course introduces students to the practical aspects of operating and maintaining water treatment plants. Topics covered include drinking water regulations (including the Safe Drinking Water Act), iron and manganese control, fluoridation, softening, trihalomethanes, demineralization, handling and disposal of process wastes, maintenance, instrumentation, and advanced laboratory procedures. A laboratory component allows students to gain hands-on experience.

*Prerequisite: WET 156*

**WET 261 (4 credits)**  
**Advanced Wastewater and Solids Handling**

Building upon the material covered in WET 161 and WET 206, the course covers the equipment and advanced treatment processes used for odor control, pure oxygen activated sludge treatment, solids removal from secondary effluents, residual solids management, enhanced biological control including nitrogen and phosphorus removal, and wastewater reclamation. Additional topics such as sludge types, characteristics, and quantities; sludge thickening using gravity thickeners, dissolved air flotation units, centrifuges and thermal conditioning as well as wet oxidation and elutriation; dewatering with pressure filtration (plate and frame, belt, vacuum), centrifuges and drying beds; volume reduction using composting, mechanical drying, incineration, and lagoons; and disposal methods for dewatered or liquid stabilized sludge are covered.

*Prerequisite: WET 206*



# welding technology

The Welding Technology Certificate Program provides the opportunity to develop skills necessary to be a skilled entry level welders in the welding industry. There is an increasing demand for welders in a variety of industries including light and heavy construction, automobile, aircraft, gas and oil, railroad, machinery and manufacturing industries. These skills are developed through theory and hands-on application into various welding specialties including Blueprint Reading and Advanced Computer Aided Design, Oxy-Fuel Welding and Related Processes, Basic Shielded Metal Arc Welding, Basic Gas Metal Arc Welding, and Basic Gas Tungsten Arc Welding.

Students find employment in a wealth of industries related to construction, machinery, manufacturing oil and gas, and transportation industries. Graduates with entry level certifications will find challenging jobs with opportunity for rapid advancement.

## PROGRAM OBJECTIVES:

- Interpret welding blueprints
- Weld carbon steel, aluminum and stainless steel with the oxy fuel welding process
- Weld carbon steel with the shielded metal arc welding process
- Weld carbon steel, aluminum and stainless steel with the gas metal arc welding process
- Weld carbon steel, aluminum and stainless steel with the gas tungsten arc welding process



**LeRoy Begay, Instructor**  
 Certified Welding School, Denver, CO  
 American Welding Society  
 Certified Welding Inspector and Educator



## MODEL SCHEDULE FOR WELDING TECHNOLOGY

### SEMESTER 1

WELD 105 Welding Blueprint Reading	2
WELD 110 OxyFuel welding and Related Processes	3
WELD 120 Shielded Metal Arc Welding	3
WELD 150 Introduction to Safety	1

### SEMESTER 2

WELD 155 Gas Metal Arc Welding I (1st 8 wks)	3
WELD 160 Gas Metal Arc Welding II (2nd 8 wks)	3
WELD 165 Gas Tungsten Arc Welding I (1st 8 wks)	3
WELD 170 Gas Tungsten Arc Welding II (2nd 8 wks)	3

### SEMESTER 3

WELD 205 Flux Cored Arc Welding	3
WELD 220 Shielded Metal Arc Welding II	3
WELD 225 Metallurgy	3
WELD 230 Special Welding Processes	3

### SEMESTER 4

WELD 260 Gas Metal Arc Welding III	3
WELD 270 Gas Tungsten Arc Welding III	3
WELD 275 Pipe Welding	3
WELD 280 Non-Destructive Testing	3

### ADDITIONAL GENERAL EDUCATION REQUIREMENTS

ENG 106 English Composition	3
ENG 216 Technical Report Writing	3
MATH 126 Technical Math I or Intermediate Algebra (131)	3
MATH 136 Technical Math II or Trigonometry (141)	3
CIS 105 Drawing with AutoCAD	3
Science ELECTIVE - Science	3
Humanities ELECTIVE - Humanities	3
Elective - General Studies	3
Elective - Health	1

**TOTAL CREDITS** **66**

# welding technology (WELD)

## **WELD 105 (3 credits)** **Welding Blueprint Reading**

A study of industrial blueprints. Emphasis on terminology, symbols, graphic description, and welding processes, including systems of measurement and industry standards. Interpretation of plans and drawings used by industry.

## **WELD 110 (3 credits)** **Oxy-Fuel Welding and Related Processes**

Provides technical information and hands-on experience in flat, horizontal, vertical and overhead positions using oxygen fuel welding and cutting processes. Topics include rod sizes, common flaws, types of welds, brazing operations and joint designs.

## **WELD 120 (3 credits)** **Shielded Metal Arc Welding 1**

The course develops skills in Shielded Metal Arc Welding (SMAW I). Students will learn applications, set-ups, operations, and troubleshooting of this processes. Significant hands-on practice is provided.

## **WELD 150 (1 credit)** **Introduction to Safety**

## **WELD 155 (3 credits)** **Gas Metal Arc Welding**

The course develops skills in Gas Metal Arc Welding I (GMAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

## **WELD 160 (3 credits)** **Gas Metal Arc Welding 2**

The course develops skills in Gas Metal Arc Welding II (GMAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

*Prerequisite* WELD 155

## **WELD 165** **Gas Tungsten Arc Welding (3 credits)**

The course develops skills in Gas Tungsten Arc Welding I (GTAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

## **WELD 170** **Gas Tungsten Arc Welding 2 (3 credits)**

The course develops skills in Gas Tungsten Arc Welding II (GTAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided in advanced skills.

*Prerequisite* WELD 165

## **WELD 205** **Flux cored and submerged arc welding (3 credits)**

This course is an advanced welding application & safety, set-up, wire identification, current, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills using the FCAW and SAW on carbon steels using small and large diameter flux-cored electrodes in all positions on fillet and groove welds.

*Prerequisite:* WELD 155, WELD 160

## **WELD 220** **Shielded Metal Arc Welding 2 (3 credits)**

This course is an advanced welding application & safety, current selection, electrode identification, welding methods, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills on carbon and stainless steels using various electrodes in all positions on fillet and groove welds.

*Prerequisite:* WELD 120

## **WELD 225 (3 credits)** **Metallurgy**

This course develops the understanding of physical characteristics and mechanical properties of metals for welding application. This program is designed to provide training in identifying base metals and selection of weld filler metals and understand how welding heat affects base metals during the welding process.

*Prerequisite:* none

## **WELD 230 (3 credits)** **Special Welding Processes**

This course is an advanced welding application & safety, set-up, wire identification, current, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills using the Submerged Arc Welding (SAW), Stud Welding and Tube Welding processes on carbon and Stainless steels using specialized equipment in various positions.

*Prerequisite:* WELD 155, WELD 165

## **WELD 260 (3 credits)** **Gas Metal Arc Welding 3**

This course is an advanced welding application & safety, set-up, wire identification, current, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in development of welding skills on aluminum, carbon and stainless steels on all positions on fillet and groove welds.

*Prerequisite:* WELD 155, WELD 160

**WELD 270 (3 credits)**  
**Gas Tungsten Arc Welding 3**

This course is an advanced welding application, set-up, welding rod identification, current, polarity and high frequency, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills on aluminum, carbon and stainless steels using various filler metals in all positions on fillet and groove welds.

*Prerequisite: WELD 165, WELD 170*

**WELD 275 (3 credits)**  
**Pipe Welding**

This course develops pipe welding application, preparation and set-up, current, shielding gases, welding techniques and quality inspection of the welds. Significant hands-on application designed to provide training in development of pipe welding skills on carbon steels pipe using various welding processes in all positions on groove welds.

*Prerequisite: WELD 120, WELD 220*

**WELD 280 (3 credits)**  
**Non-Destructive Testing**

This course introduces the welder of non-destructive examination methods to determine the physical properties of a weld and to predict the service life of a weld. Students will learn to differentiate between destructive and non-destructive testing methods to identify discontinuities and defects in welds by using various non-destructive testing equipment to various specifications and codes.

*Prerequisite: WELD 105*





# construction electrician certificate (9-month)

The Construction Electrician certificate program provides students with the opportunity to acquire the theory and skills needed to gain employment as residential, commercial, and industrial construction electricians. Skills are developed through basic electrical theory and practical work project assignments. This program will give students a broad theoretical and practical background in all aspects of electrical construction.

Graduates of the construction electrician program are prepared to find employment as residential, commercial, and industrial construction electricians. Because of the continual growth in building construction, there are many employment possibilities.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate appropriate technical skills in the electrical construction field.
- Demonstrate the ability to design, develop, and troubleshoot residential, commercial, and industrial circuitry.
- Complete parts list and order forms that demonstrate knowledge of coding and numbering systems for devices, hardware, and electrical equipment.
- Interpret, develop, and utilize blueprints, schematic diagrams, and wiring plans to perform electrical construction activities.
- Demonstrate the ability to apply OSHA-accepted safety standards as appropriate.
- Demonstrate knowledge of National Electrical Codes that apply to specific occupancies.
- Demonstrate knowledge of test equipment used in troubleshooting and repair of circuits, distribution systems, and electrical equipment.

### **COEL 106 (5 credits)** **AC/DC Fundamentals**

This course presents basic principles, laws and formulas which relate to alternating (AC) and direct current (DC) circuit applications in electricity. Topics include electron theory, Ohm's Law, series, parallel and combination circuit theory. In addition, capacitive and inductive reactive circuitry (RE, RC, RLC) are discussed.

### **COEL 111 (5 credits)** **Residential Wiring**

This course is an introduction to residential wiring practices and techniques. Topics cover basic residential symbols, blueprint reading, wire diagramming, and the use of applicable National Electrical Codes (NEC). Lab work and projects enable students to develop an understanding of basic residential circuits.

### **COEL 116 (2 credits)** **Electrical Construction Safety**

This course presents Occupational Safety and Health Administration (OSHA) general safety requirements for specific electrical and construction environments. Topics include ladders, scaffolds, lockout and tagging, personal protective equipment (PPE), temporary wiring, harness techniques and confined spaces.

### **COEL 156 (5 credits)** **Commercial and Industrial Wiring**

Basic theory and laboratory assignments in safety, wiring practices, blueprint reading, and the National Electrical Code (NEC) as it applies to commercial and industrial wiring techniques. Labs enable students to gain practical experience installing and troubleshooting single- and three-phase distribution, transformers, motors, and motor control circuits.

*Prerequisite: COEL 102*

### **COEL 161 (3 credits)** **National Electrical Code**

This course is designed to provide students with a comprehensive understanding of the National Electrical Code (NEC). Topics include foundational provisions, one family dwellings, multi-family dwellings, commercial locations, special occupancies, areas and equipment.

### **COEL 166 (3 credits)** **Blueprint Reading: Electrical**

This course is an introduction to basic blueprint reading skills and techniques. Topics cover lines and symbols, pictorial and orthographic diagrams, specifications, scales, prints, and plans. Classwork enables students to develop a basic understanding of construction drawings.

### **Michael Oxenford, Instructor**

Bachelor's Equivalency (Industrial Education Electrical Technology: Temple University)  
Vocational Certificate II (Electrical Technology),  
Pennsylvania Department of Education  
Pennsylvania Competency Certificate (Electrical Technology)  
NCCER Certified Instructor, Electrical  
Occupational Safety and Health Administration (OSHA):  
Construction Safety and Health Certificate  
Master Electrician  
Electrical Apprenticeship: International Brotherhood of  
Electrical Workers, Local Union 743



### **MODEL SCHEDULE FOR CONSTRUCTION ELECTRICIAN**

#### **SEMESTER 1**

COEL 106 AC/DC Fundamentals	5
COEL 111 Residential Wiring	5
COEL 116 Electrical Construction Safety	2
MATH 126 Technical Mathematics I	3
ENG 106 Composition I	3

#### **SEMESTER 2**

COEL 156 Commercial/Industrial Wiring	5
COEL 161 National Electrical Code	3
COEL 166 Blueprint Reading:Electrical	3
ELECTIVE Elective	3
ELECTIVE Elective	3

# general machine certificate (9-month)

The General Machine certificate program offers a broad training experience that prepares individuals for entry-level employment in the machining industry. Through a combination of classroom study and assigned lab activities, students acquire essential background information, develop trade skills, and become familiar with production methods and standards common to the industry. Within the lab setting, emphasis is on the practical application of skills. Students will learn to operate a variety of conventional machine tools and computer numerical control (CNC) machines, interpret industrial drawings/blueprints, and use precision measuring and inspection instruments.

Students enrolled in the certificate program may enroll in the associate degree program upon completion of the certificate program. Graduates of the General Machine certificate program are employed as machine operators, machinists, CNC operators, and quality control inspectors.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Demonstrate safe work habits and be conscious of safety when working with machinery.
- Read blueprints, interpret drawings, understand specifications, and establish tolerances.
- Apply mathematics in machine tool technology (speeds, feeds, thread measurement, sine bar, etc.)
- Operate basic machine tools and demonstrate knowledge of their construction in relation to the metal industry.
- Operate abrasive cutting machinery; select and plan machining operations on this equipment.
- Demonstrate skills in quality control, inspection, gauging methods, and production control as they relate to manufacturing design and production.

## Alex Surra, Instructor

MEd, BSE: Millersville University  
AAS: Thaddeus Stevens College of Technology  
Level II Teaching Certificate: Commonwealth of PA  
OSHA Authorized General Industry Trainer: Mid-Atlantic OTI Education Center

## MODEL SCHEDULE FOR MACHINIST CERTIFICATE

### SEMESTER 1

MACH 106 Blueprint Reading and Related Math	3
MACH 112 Cutting Tools and Measurement	3
MACH 118 Lathe and Vertical Milling Machine I	4
MACH 123 Surface Grinding and Abrasive Machining I	2
MATH 126 Technical Math -or-	3
MATH 137 Intermediate Algebra	
ENG 106 Composition I	3

### SEMESTER 2

MACH 158 Lathe and Vertical Milling Machine II	3
MACH 222 CAD/CAM I	3
MACH 168 Machine Skills Lab	4
MACH 172 Computer Numerical Control I	3
Science Elective	3
Humanities Elective	3

see page 70 for course descriptions



# masonry construction certificate (9-month)

The Masonry Construction certificate provides the opportunity to develop the basic skills of a mason and is designed as an introduction to the trade. Students will focus on basic tool skills, trade materials, safety procedures and terminology. Emphasis is placed on brick and block skill sets. These skills are developed through hands-on projects, which are preceded by theory lectures and demonstrations. Special emphasis is placed on the appreciation of the beauty and permanence of brickwork and on the development of pride in workmanship.

Students successfully completing the Masonry Construction certificate program find employment in the field as mason tenders and masons with experience and further education as forepersons or superintendents. Many masons are self-employed.

All students completing the certificate program may enroll in the associate degree program.

## PROGRAM OBJECTIVES:

A graduate of this program will be able to do the following:

- Operate masonry tools and equipment safely and effectively.
- Use masonry terminology.
- Read blueprints to estimate materials quantity and pricing.
- Lay out and construct footings.
- Lay out and build a block foundation.
- Apply brick veneering to a structure.
- Construct a masonry arch.

**Michael T. Gardner, Instructor**

AAS: Thaddeus Stevens College of Technology

## MODEL SCHEDULE FOR MASONRY CONSTRUCTION

### SEMESTER 1

MASN 101 Intro to Tools, Safety, and Equipment	3
MASN 105 Intro to Masonry Construction	3
MASN 110 Development of Masonry Materials	3
MASN 116 Chimney Construction	3
MATH 126 Technical Mathematics I or higher	3

### SEMESTER 2

MASN 155 Block Construction, Bearings, and Anchoring Systems	4
MASN 158 Adhered Concrete Masonry Veneer	2
MASN 162 Masonry, Hard-scaping, Patios, and Retaining Walls	2
MASN 171 Concrete Sidewalks	1
MASN 167 Masonry Restoration & Building Maintenance	3
ENG 106 English Composition	3
HEAL 111 Basic First Aid	1

see page 74 for course descriptions

# welding technology certificate (9-month)

The Welding Technology Certificate Program provides the opportunity to develop skills necessary to be a skilled entry level welders in the welding industry. There is an increasing demand for welders in a variety of industries including light and heavy construction, automobile, aircraft, gas and oil, railroad, machinery and manufacturing industries. These skills are developed through theory and hands-on application into various welding specialties including Blueprint Reading and Advanced Computer Aided Design, Oxy-Fuel Welding and Related Processes, Basic Shielded Metal Arc Welding, Basic Gas Metal Arc Welding, and Basic Gas Tungsten Arc Welding.

Students find employment in a wealth of industries related to construction, machinery, manufacturing oil and gas, and transportation industries. Graduates with entry level certifications will find challenging jobs with opportunity for rapid advancement.

## PROGRAM OBJECTIVES:

- Interpret welding blueprints
- Weld carbon steel, aluminum and stainless steel with the oxy fuel welding process
- Weld carbon steel with the shielded metal arc welding process
- Weld carbon steel, aluminum and stainless steel with the gas metal arc welding process
- Weld carbon steel, aluminum and stainless steel with the gas tungsten arc welding process

## LeRoy Begay, Instructor

Certified Welding School, Denver, CO  
American Welding Society  
Certified Welding Inspector and Educator

### MODEL SCHEDULE FOR WELDING TECHNOLOGY CERTIFICATE PROGRAM

#### SEMESTER 1

WELD 105 Welding Blueprint Reading	2
WELD 110 Oxy-Fuel Welding & Related Processes (1st 8 weeks)	3
WELD 120 Shielded Metal Arc Welding 1 (2nd 8 weeks)	3
MATH 126 Technical Math 1 or higher	3
ENG 106 English Composition	3

#### SEMESTER 2

WELD 155 Gas Metal Arc Welding 1 (1st 8 weeks)	3
WELD 160 Gas Metal Arc Welding 2 (2nd 8 weeks)	3
WELD 165 Tungsten Arc Welding 1 (1st 8 weeks)	3
WELD 170 Gas Tungsten Arc Welding 2 (2nd 8 weeks)	3
MATH 136 Technical Math 2 or higher	3
ENG 216 Technical Writing	3

<b>TOTAL CREDITS</b>	<b>32</b>
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**WELD 105 (3 credits)**  
**Welding Blueprint Reading**

A study of industrial blueprints. Emphasis on terminology, symbols, graphic description, and welding processes, including systems of measurement and industry standards. Interpretation of plans and drawings used by industry.

**WELD 110 (3 credits)**  
**Oxy-Fuel Welding and Related Processes**

Provides technical information and hands-on experience in flat, horizontal, vertical and overhead positions using oxygen fuel welding and cutting processes. Topics include rod sizes, common flaws, types of welds, brazing operations and joint designs.

**WELD 120 (3 credits)**  
**Shielded Metal Arc Welding 1**

The course develops skills in Shielded Metal Arc Welding (SMAW I). Students will learn applications, set-ups, operations, and troubleshooting of this processes. Significant hands-on practice is provided.

**WELD 155 (3 credits)**  
**Gas Metal Arc Welding**

The course develops skills in Gas Metal Arc Welding I (GMAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

**WELD 160 (3 credits)**  
**Gas Metal Arc Welding 2**

The course develops skills in Gas Metal Arc Welding II (GMAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

*Prerequisite: WELD 155*

**WELD 165**  
**Gas Tungsten Arc Welding (3 credits)**

The course develops skills in Gas Tungsten Arc Welding I (GTAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided.

**WELD 170**  
**Gas Tungsten Arc Welding 2 (3 credits)**

The course develops skills in Gas Tungsten Arc Welding II (GTAW). Students will learn applications, set-ups, operations, and troubleshooting of these processes. Significant hands-on practice is provided in advanced skills.

*Prerequisite: WELD 165*

**WELD 205**  
**Flux cored and submerged arc welding (3 credits)**

This course is an advanced welding application & safety, set-up, wire identification, current, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills using the FCAW and SAW on carbon steels using small and large diameter flux-cored electrodes in all positions on fillet and groove welds.

*Prerequisite: WELD 155, WELD 160*

**WELD 220**  
**Shielded Metal Arc Welding 2 (3 credits)**

This course is an advanced welding application & safety, current selection, electrode identification, welding methods, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills on carbon and stainless steels using various electrodes in all positions on fillet and groove welds.

*Prerequisite: WELD 120*

**WELD 225 (3 credits)**  
**Metallurgy**

This course develops the understanding of physical characteristics and mechanical properties of metals for welding application. This program is designed to provide training in identifying base metals and selection of weld filler metals and understand how welding heat affects base metals during the welding process.

**WELD 260 (3 credits)**  
**Gas Metal Arc Welding 3**

This course is an advanced welding application & safety, set-up, wire identification, current, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in development of welding skills on aluminum, carbon and stainless steels on all positions on fillet and groove welds.

*Prerequisite: WELD 155, WELD 160*

**WELD 270 (3 credits)**  
**Gas Tungsten Arc Welding 3**

This course is an advanced welding application, set-up, welding rod identification, current, polarity and high frequency, shielding gases, operations and troubleshooting techniques of the process. Significant hands-on application designed to provide training in advancement of welding skills on aluminum, carbon and stainless steels using various filler metals in all positions on fillet and groove welds.

*Prerequisite: WELD 165, WELD 170*

**WELD 275 (3 credits)**  
**Pipe Welding**

This course develops pipe welding application, preparation and set-up, current, shielding gases, welding techniques and quality inspection of the welds. Significant hands-on application designed to provide training in development of pipe welding skills on carbon steels pipe using various welding processes in all positions on groove welds.

*Prerequisite: WELD 120, WELD 220*

**WELD 280 (3 credits)**  
**Non-Destructive Testing**

This course introduces the welder of non-destructive examination methods to determine the physical properties of a weld and to predict the service life of a weld. Students will learn to differentiate between destructive and non-destructive testing methods to identify discontinuities and defects in welds by using various non-destructive testing equipment to various specifications and codes.

*Prerequisite: WELD 105*



# technical studies-journeyworker

In response to requests for academic recognition of registered apprenticeship training, Thaddeus Stevens College of Technology (TSCT) provides a Technical Studies-Machining Technology Associate in Applied Science Degree. This degree recognizes the goals, general principles and procedures of registered apprenticeship training. The Technical Studies-Machining Technology AAS degree is designed to support lifelong learning and accelerate the achievement of individual career goals. Transferability of the Technical Studies portion of the AAS degree to four-year institutions will be based on the accepting institution's policies.

## PROGRAM REQUIREMENTS:

- For admission, students must possess a PA Apprenticeship Completion Certificate issued by the Pennsylvania Department of Labor and Industry.
- Complete all prescribed apprentice related technical instruction.

## GRADUATION REQUIREMENTS:

- Requirements for Graduation (70 credit hours)
- 46 credits Technical Studies (awarded as advanced standing)
- 24 credits General Studies required from the following:
  - English (ENG)
  - Mathematics (MATH)
  - Science (includes PHYS, BIO, etc.)
  - Humanities (includes all SOC, ECON, HIST)

25% of the total program credits must be completed at Thaddeus Stevens College

# short term programs

## metalcasting

Metalcasting is a three week course designed to develop a Metalcasting Technician capable of taking molten liquid metal and pouring it into molds to form shapes that are then ground and polished before being finished. They work with all types of metals and different molds to make parts for machines and equipment. Students will learn:

Importance of metal casting in the modern manufacturing

- Properties of metals
- All about patterns design and making
- Molding sand and mold making
- Metal preparation and melting
- How to operate a furnace to melt metal for casting
- Finishing methods

## production welding

Production Welding is a five week course designed to develop a skilled entry level worker capable of performing various welding techniques needed to support local industrial needs.

Students will learn:

- Basic industrial blueprint reading
- Welding Safety and OSHA Certification
- Oxy-Fuel Welding and Related Processes
- Shielded Metal Arc Welding
- Gas Metal Arc Welding
- Gas Tungsten Arc Welding
- Other welding techniques as appropriate

# general education

## computer information systems courses

### **Tara Faro, Instructor**

MS: The Pennsylvania State University  
BS: West Chester University

### **CIS 105 (3 credits)** **Drawing with AutoCAD®**

Provides an introduction to the use of computer software used to draw. Students learn introductory AutoCAD® commands used to create basic geometric shapes and editing functions used to modify geometry. Measuring and distance specifications for objects is taught along with text creation for use in notes and specifications. Students also learn to use image transfer software that converts pictures and images into line geometry. (NOTE: ARCH and MET students may not take this course without consent of their respective program faculty members.)

### **CIS 111 (3 credits)** **Introduction to Computer Applications**

Introduction to applications for use in the professional and college environment. Students obtain skills in the latest business software. Activities consist of hands-on exercises using the operating system, word processing, spreadsheet, database management, and presentation programs.

### **CIS 211 (3 credits)** **Microsoft Excel**

This is a comprehensive course in Excel®. It contains everything from basic introductory material to complex business formulas and mapping procedures. Students upon completion will be prepared to take the Microsoft Office User Specialist (MOUS) exam for Excel® certification.

*Prerequisite: CIS 111 or obtain instructor's permission with the exception of ECAD students who are not required to take CIS 111*

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## english courses

### **Marla Bucy, Associate Professor**

MA: Temple University  
BS: Millersville University

### **Patricia Meley, Instructor**

MA: The Pennsylvania State University  
BA: Lynchburg College

### **Ann Reading, Instructor**

MA: Mercy College  
BA: New York Institute of Technology

### **Melissa Weathers, Instructor**

MS: Lincoln University  
BS: West Chester University

### **ENG 106 (3 credits)** **English Composition I**

Develops fluency in writing. Creates interest in and respect for proper usage, sentence structure, and precise expression.

### **ENG 116 (3 credits)** **Short Story and Poetry**

Analysis of a variety of short stories and poems with an emphasis on developing interpretive skills. Special attention given to individual presentations and class discussion. technique, symbolism, irony, style, and social significance.

### **ENG 216 (3 credits)** **Technical Report Writing**

Presents technical subject matter with emphasis on intensive practice in the various methods of expository writing. Attention given to various technical forms, including instruction, proposal, progress, and feasibility reports.

*Prerequisite: ENG 106 or instructor permission*

### **ENG 221 (3 credits)** **Public Speaking**

Course includes modes of speech communication, such as demonstration, information, persuasion, and interview.

### **ENG 255 (3 credits)** **Short Contemporary Novel**

The course covers essential components of fiction, including character, theme, plot, setting, narrative

# history courses

## **Patricia Meley, Instructor**

MA: The Pennsylvania State University  
BA: Lynchburg College

### **HIST 106 (3 credits) American History I**

This course surveys American history from the colonial period to the Reconstruction period following the American Civil War. Students gain an understanding of the major events that have shaped American history; learn how American cultural values and character have developed as a result of these events; understand how myths and stereotypes about American history affect our perception of the past and present; and analyze and understand how economics, politics, society, religion, and geography are interrelated and impact on history.

### **HIST 111 (3 credits) American History II**

This course surveys American history from the Reconstruction period following the American Civil War to the Vietnam War. Students gain an understanding of the major events that have shaped American history; learn how American cultural values and character have developed as a result of these events; understand how myths and stereotypes about American history affect our perception of the past and present; and analyze and understand how economics, politics, society, religion, and geography are interrelated and impact on history.

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# health courses

### **HEAL 106 (1 credit) Fitness and Wellness**

Offers information that enables students to take control of their personal health and lifestyle habits so as to make a continuous, deliberate effort to stay healthy and to achieve well-being. Students learn to develop personal lifetime programs that promote fitness, preventative health care, and personal wellness.

### **HEAL 111 (1 credit) Basic First Aid**

Provides individuals in the workplace the knowledge and skills necessary to recognize and provide basic first aid care for injuries and sudden illnesses until advanced medical personnel arrive and take over.

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# mathematics courses

In programs that require 2 math classes, students may take a higher level math class and a general ed class to make up for the requirement, if they place into said math level.

## **Nasser B. Adem, Instructor**

MEd: Millersville University  
BA: Addisa Adaba University

## **Trina Hess, Instructor**

MA: Villanova University  
BS: The Pennsylvania State University

## **Nora Othman, Ed.D, Instructor**

EdD; MS: West Virginia University  
BS: University of Miami

### **MATH 111 (3 credits) Business Mathematics**

Mathematics skills necessary to do calculations and procedures to operate a successful office or small business. Percentage and simple interest, credit, business ownership, compound interest, payroll and taxes, insurance, mortgages, and home ownership are covered.

*Prerequisites: Satisfactory score on the math placement test OR DMAT 030*

### **MATH 126 (3 credits) Technical Mathematics I**

This course is an introduction to the mathematics required of students in technical programs. Designed for students whose academic background does not emphasize algebra or geometry. Includes a review of arithmetic, signed numbers, basic algebra, plane geometry, and other topics. Emphasis is on problem solving.

*Prerequisites: Satisfactory score on the math placement test OR DMAT 030 Introduction to Algebra*



**MATH 132 (3 credits)**  
**Elementary Geometry**

This course is designed for students who did not have geometry in high school. It covers plane geometry topics, which include basic concepts, parallel lines, triangles, quadrilaterals, and circles. Theorems and postulates are included but emphasis is on measurement and constructions. This course is intended to substitute for Technical Mathematics II for those students who are not required to take Principles of Physics. It covers the practical geometry that is used in construction majors.

*Prerequisites:* MATH 126 or MATH 137

**MATH 136 (3 credits)**  
**Technical Mathematics II**

This course covers solving linear and quadratic equations, functions, graphing linear quadratic equations, polynomials, solving trigonometric ratios, solving right triangles and interpreting basic statistics.

*Prerequisites:* MATH 126 or MATH 137

**MATH 137 (3 credits)**  
**Intermediate Algebra**

This course reviews the structure and use of algebra through a combination of topics including polynomials, first-degree equations, quadratic equations, exponents, radicals, and systems of linear equations. Graphing first and second-degree equations is emphasized.

*Prerequisites:* Satisfactory score on the math placement test or DMAT 030 Introduction to Algebra with C or higher

**MATH 141 (3 credits)**  
**Trigonometry**

This course shows how mathematics can be applied in a physical setting. The theoretical foundations will be established and explored but emphasis will be placed on practical applications. Highlighted are the trigonometric functions used to solve right triangles, solving oblique

triangles using the Law of Sines and the Law of Cosines, and the graphs of the trigonometric functions.

*Prerequisites:* MATH 137

**MATH 150 (3 credits)**  
**Elementary Statistics**

Covers measures of central tendency and variability; probability and normal curve; and sampling and hypothesis testing. Students need to possess mathematical skills necessary to do calculations and derivation of basic formulas.

**MATH 207 (4 credits)**  
**Pre-Calculus**

Designed to prepare students for continuation into MATH 213: Calculus. Develops the concepts and proficiencies necessary to work successfully in the areas of elementary functions, theory of equations, inequalities, trigonometry and analytic geometry.

*Prerequisites:* Satisfactory score on the math placement test or Math 141

**MATH 213 (4 credits)**  
**Calculus**

Introduces the concepts and techniques of calculus beginning with functions and limits. Major emphasis is on theory and applications of the derivative, antiderivative, indefinite integral and definite integral, including introductory calculus of trigonometric, exponential and logarithmic functions.

*Prerequisites:* Satisfactory score on the math placement test or MATH 141 or MATH207 and instructor permission.

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## science courses

**David W. Manning, Associate Professor**

MA: The Pennsylvania State University

BA: Slippery Rock University

**Patricia A. McKinney, PhD, Assistant Professor**

PhD: Harvard University Graduate

School of Arts & Sciences

BS: Eastern Nazarene College

**BIO 210 (4 credits)**  
**General Biology I**

This course explores the processes fundamental to life. Laboratory activities reinforce classroom theoretical content. Topics covered include biochemical principles, cell structure and function, intracellular and intercellular transport and communication, metabolic pathways including cellular respiration and photosynthesis, cell reproduction, Mendelian

genetics, inheritance patterns and laws, DNA replication and repair, RNA transcription and processing, protein synthesis, regulation of gene expression, biotechnology and key structural and reproductive characteristics of viruses, bacteria, and protists.

*Prerequisites:* High school biology and chemistry strongly recommended.

*Students must be matriculated in an approved TSCT program of study or obtain instructor permission.*

**CHEM 100 (3 credits)**  
**Conceptual Chemistry**

This course explores inorganic chemistry principles at the conceptual level. Intermittent in-class laboratory activities reinforce theoretical content. Special emphasis is placed on relating chemical principles to industry, the environment, and everyday events. Topics covered include the atomic structure

and classification of matter, the periodicity of elements and their properties, intramolecular and intermolecular bonding, chemical reactions including oxidation-reduction reactions, thermochemistry, solutions, acids/bases, water chemistry, gases, and nuclear chemistry.

### **CHEM 110 (4 credits)** **General Chemistry I**

This course explores the fundamental principles of inorganic chemistry. Laboratory activities reinforce classroom theoretical content. Topics covered include the physical states and properties of matter, scientific measurement, problem solving, periodicity of elements, atomic structure, early and modern atomic theory, electron configuration, nomenclature, chemical composition, chemical equations and stoichiometry, chemical reactions, thermochemistry, chemical bonding and molecular geometry, gas laws, and solutions.

*Prerequisites: MATH 137 with a minimum grade of "C" or instructor permission*

### **PHYS 101 (3 credits)** **How Things Work**

This is an introductory physics course that focuses on the ideas, concepts, and engineering behind everyday objects. The history of these objects and their relationships to physical laws are examined. Enrolled students create simple projects to demonstrate their understanding. Only basic mathematical skills are required.

### **PHYS 106 (3 credits)** **Physics for Everyday Life**

Brief overview of physics. Includes motion, work, power, energy, and properties of matter, sound, and light. Electrodynamics, atomic physics, and nuclear physics are also discussed. Basic mathematical and algebra skills utilized.

### **PHYS 113 (3 credits)** **Statics**

Elementary, analytical, and practical approach to the principles and physical concepts of statics. Topics include force systems, principles of equilibrium, structural analysis of trusses and frames, friction, centroids, and moments of inertia.

*Prerequisites: MATH 137 and MATH 141 or instructor permission.*

### **PHYS 213 (4 credits)** **General Physics I**

This course is a four-credit, algebra-based physics course in which one of the credits is devoted toward lab work. The course is an in-depth study of statics, kinematics, dynamics, work, power, energy, and the properties of matter.

*Prerequisites: MATH 137 and MATH 141 or instructor permission.*

### **SCI 107 (3 credits)** **Environmental Science**

This course is a comprehensive, multidisciplinary overview of environmental issues and the integral role humans play in shaping our natural surroundings. Topics covered include energy flow, biotic and abiotic factors in ecosystems, environmental law, terrestrial biomes and aquatic ecosystems, population dynamics, renewable and nonrenewable resources, fossil fuels and alternative energy sources, water resources and pollution, air pollution, ozone depletion, climate change, waste disposal, land and food resources, conservation, and sustainable living.

*Prerequisite: ENG 106 or permission of the instructor*

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## **social sciences courses**

### **Heriberto Arjona, Assistant Professor**

MBA: Universidad Inter-Americana de Costa Rica  
BA: Indiana University of Pennsylvania

### **Vincent E. Miles, PhD., Professor**

PhD, MA: Indiana University of Pennsylvania  
BA: Mansfield University of Pennsylvania  
AAS: Thaddeus Stevens College of Technology

### **BUSN 106 (3 credits)** **Small Business Management**

Focuses on the world of small business, including getting involved as an entrepreneur; selecting business opportunities; and keeping the business afloat.

### **ECON 240 (3 credits)** **Principles of Macroeconomics**

This course covers ideas, models and concepts to give students a better understanding of our nation's and global economies. We will use references from real-world corporations, government policies, and current events, and explore how events and policies change the market equilibrium. Students will analyze macroeconomic data using equations and conceptual graphs.

**ECON 230 (3 credits)**  
**Principles of Microeconomics**

This course introduces students to foundational principles of microeconomic theory, with an emphasis on economic decisions made at the individual or firm level. It describes and analyzes the interaction of supply and demand and the behavior of the prices of goods and services. It explains the determinations of costs, output, strategic pricing, and purchasing decisions under various market structures in a global economy. In addition, it describes the supply and demand for factors of production with an emphasis on graphical formatting.

**PSY 116 (3 credits)**  
**Introduction to Psychology**

Students learn the major specialties of the field and assumptions upon which they are based. Techniques used by psychologists are discussed.

**SOC 106 (3 credits)**  
**Principles of Sociology**

Provides a systematic interpretation of major elements of sociology, including social dynamics, deviant behavior, social and cultural change, and developing major social trends.

**SOC 121 (3 credits)**  
**Critical Thinking**

Provides an introduction to critical reading, writing, and thinking. Encourages students to pose questions at appropriate times and to have a generally critical attitude toward advertising and other aspects of popular culture.

**SOC 206 (3 credits)**  
**Sociology of Deviant Behavior**

Deviant social behavior are discussed. Topics include development of deviant individual's personality; deviant careers; conflicts between the deviant's and the normative social world. Social techniques and patterns used to resolve such conflicts are also covered.

**SOC 216 (3 credits)**  
**Multiculturalism**

Introduction to general issues regarding cultural diversity. A focus on complex and diverse group activities in the contemporary workplace with an emphasis on coping skills with persons from different ethnic, gender, religious, and professional backgrounds and perspectives.

**SOC 221 (3 credits)**  
**Marriage and the Family**

Contemporary American marriage and family patterns are discussed. Topics include historical and cross-cultural perspectives; current trends toward urbanization and changing value systems; and cultural, psychological, and social factors involved in the changing American family.

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## special courses

**TECH 100–105 (1–5 credits)**  
**Special Topics**

Special topics are selected. The topic to be studied is determined by the instructor and approved by the vice president for academic affairs. Credits earned are applicable either as free electives in the program or as credits used for graduation (with the approval of the vice president for academic affairs.)

**TECH 100, 199, 200, or 299 (1–8 credits)**  
**Internships**

Representing a possibility of four semesters, internships are designed to provide credit for supervised on-the-job work experience directly related to a student's major. Credit varies based upon the total hours worked. The credit-to-work hour ratio is 1 credit = 50 work hours. These courses include employer supervision and evaluation.

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## pre-major program

Students may need to complete a course or courses at a foundational level before entering a specific program of study. Students in foundational reading, writing, and mathematics courses are required to earn at least a "C" grade. Students must also pass COMPASS testing requirements or demonstrate academic excellence in required courses with grades of "B" or higher.

\*These courses may not be used to meet graduation requirements.

**Samuel L. Bigler, Associate Professor**  
MEd, BS: Millersville University

**Sean McKnight, Professor**  
BS: Millersville University  
MS: Penn State University



### **CP 011 \*** **Career Preparation I**

Students are introduced to eight different areas of technology, drafting, electronics, graphics, woodworking, engineering, plastics, ceramics, and metals. By exposing students to these eight different areas, students gain a better understanding of each area and how it may apply to them specifically.

*Prerequisite: Must obtain a "C" or higher for successful completion.*

### **CP 012 \*** **Career Preparation II**

This is a continuation of CP 011, where students apply advanced concepts to eight different areas of technology, drafting, electronics, graphics, woodworking, engineering, plastics, ceramics, and metals.

*Prerequisite: CP 011. Must obtain a "C" or higher for successful completion*

### **DENG 020 \*** **Basic Writing I**

Intensive review and drill in grammar, usage, and sentence/paragraph construction. For students whose test scores and/or writing performance indicate need for improvement in basic grammar skills. Course must be taken before DENG 021.

*Prerequisite: Must obtain a "C" or higher for successful completion*

### **DENG 021 \*** **Basic Writing II**

Intensive review and drill in grammar, usage, and sentence/paragraph construction. For students whose test scores and/or writing performance indicate need for improvement in basic composition skills. Students must earn a "C" or higher in this course before entrance into ENG 106.

### **DENG 025 \*** **Basic Reading I**

Development and improvement of reading skills. For students whose test scores indicate the need for improvement in basic reading skills and strategies. Course must be taken before DENG 026: Basic Reading II and may not be used to meet certificate or degree requirements. Basic Reading I is the first part of a two-semester course that is only offered in the fall semester.

*Prerequisite: Must obtain a "C" or higher for successful completion*

### **DENG 026 \*** **Basic Reading II**

Continuation of development and improvement of reading skills. The second part of a two-semester course for students whose test scores indicate need for improvement in basic reading skills and strategies. Course must be taken after DENG 025: Basic Reading I and may not be used to meet certificate or degree requirements. Basic Reading II is the second part of a two-semester course that is only offered in the spring semester.

*Prerequisite: DENG 025; must obtain a "C" or higher for successful completion.*

### **DMAT 010 \*** **Fundamentals of Mathematics**

Development and improvement of math skills. Fundamentals of Mathematics covers whole numbers, fractions, decimals, percent, measurement, and various other essential topics. For students whose test scores indicate the need for development and/or improvement in fundamental math skills, course must be taken before MATH 126: Technical Mathematics I or MATH 111: Business Mathematics; students may be required to complete DMAT 010 prior to enrollment in DMAT 030. DMAT 010 may not be used to meet certificate or degree requirements. Fundamentals of Mathematics is a one semester course offered during both semesters and summer terms.

*Prerequisite: None; by placement score. Must obtain a "C" or higher for successful completion*

### **DMAT 030 \*** **Introduction to Algebra**

Develops fundamental algebra skills necessary in vocational/technical occupations. Topics include real numbers, solving first degree equations, exponents, polynomials, and factoring. This course may not be used to meet degree requirements.

*Prerequisite: DMAT 010: Fundamentals of Mathematics with a grade of "C" or higher or by placement test*

### **DSOC 010 \*** **Success Strategies**

Encourages students to live healthy lifestyles, develop academic skills, foster habits of punctuality, and maintain good attendance records in all classes. Time management, positive attitude, and goal orientation are also covered. Included in this course is a 2.5 hour lab for developing academic technology skills.

*Prerequisite: Must obtain a "C" or higher for successful completion.*

### **DSOC 011 \*** **Success Strategies Lab**

Provides students with an opportunity to acquire fundamental computer skills and practical knowledge in applications needed for success in college coursework. Hands-on topics include use of the College portal for access to College and course materials, email guidelines, Internet research methods, file management and organization, and software for assisting in compiling research ideas and notes. In addition, exercises will be completed related to word processing (outlining tools, tables and columns to organize lists, report formatting), spreadsheet fundamentals (calculating GPA, budgets, measurement conversions and formulas, timesheets) and presentation software (developing projects).

# college information



## Admissions Policy

Thaddeus Stevens College provides educational opportunities and life experiences to individuals who have the intent, desire, and ability to seek advanced technical education. All programs of study terminate in an associate of applied science (AAS) degree with the exception of the Construction Electrician Program (nine-month certificate), the Machine Certificate Program (nine-month certificate), and the Masonry Certificate Program (nine-month certificate).

Since each technical area requires different abilities, admissions standards vary from program to program. For example, applicants for the Electrical Technology program are expected to have a more extensive background in mathematics than applicants for Collision Repair Technology or Plumbing Technology. Given an excess of qualified applicants for many programs, meeting the minimum requirements will often not be sufficient for admission. In that case, the most financially deserving and academically best prepared of the applicants will be selected. Others will be placed on a waiting list.

At a minimum, applicants must have a high school diploma or its equivalent. Questions regarding the admissions standards of a specific technical program should be directed to the Office of Admissions.

Thaddeus Stevens College reserves the right to deny admission or readmission to any individual if, in the opinion of College authorities, such is not in the best interest of the student or the College.

Admission is offered without regard to age, sex, handicap, race, religion, creed, national origin, veteran status, or political affiliation. All applicants, however, must be residents of Pennsylvania.

## College Information and Admissions Applications

All graduates of accredited secondary schools or general equivalency diploma (GED) are eligible for admission to Thaddeus Stevens College. Admission into a specific technical area is based upon evidence of scholastic readiness and personal interest.

To request information or submit an application, visit the College's website at [www.stevenscollege.edu](http://www.stevenscollege.edu) or write to: Office of Admissions, Thaddeus Stevens College of Technology, 750 East King Street, Lancaster, PA 17602. You may also call 1-800-842-3832 or 717-299-7701 between 8:00 am and 4:30 pm, Monday–Friday.

## Program Choice

When applicants apply for admission to Thaddeus Stevens College, they generally know which major interests them. Candidates who are uncertain should ask a high school

counselor or a counselor of the Pennsylvania Career Link about a career choice. Public libraries are also helpful, and Thaddeus Stevens College can help make a final decision. Call the Office of Admissions to speak with a staff person about visiting the College or visit our website at [www.stevenscollege.edu](http://www.stevenscollege.edu).

## Admissions Procedure

Once completed, submit the online application and forward the nonrefundable application fee to the Office of Admissions, 750 East King Street, Lancaster, PA 17602. There is no deadline for receipt of applications; however, applications are considered in the order received. Applicants who qualify for the Thaddeus Stevens Grant and who meet our admission standards will be given preference.

All applicants must possess a high school diploma from an accredited high school or a high school equivalency diploma (GED). Request that your high school guidance office forward a copy of your transcript to Thaddeus Stevens College beginning with the ninth grade. This transcript should reflect class standing, cumulative grade point average, attendance, and keystone test scores. If taken, SAT and/or ACT scores should also be submitted. In order to be considered for admission to the College, students must have a high school cumulative grade point average of 2.0 or higher, have a grade point average of 2.0 or higher in math, English and science, and have scored proficient in all PSSA test areas.

Upon submission of the high school transcript, keystone scores, and requested essay, these documents will be reviewed by the admissions director. If a student meets these qualifications, he/she will then be advised to participate in placement testing. The purpose of placement testing is to determine a student's preparation for college-level work. The results may indicate that the student needs a summer, a semester, or a year of remedial coursework to prepare for the credit bearing courses required for their degree. Applicants may elect to take the ACT or SAT test at one of several locations in Pennsylvania. **Applicants unable to take the ACT or SAT may elect to visit the Thaddeus Stevens College campus to take a placement test.** Because each curriculum has specific academic requirements, applicants are admitted to a curriculum based on identified criteria and placement test scores

## Drug Policy

Thaddeus Stevens College requires all students enrolling in safety-sensitive programs to successfully complete a drug screening prior to acceptance into those programs. The Office of Admissions will notify students eligible for matriculation into a program of study with instructions for conducting drug screening. Once an applicant has successfully completed the drug screening process, the College will notify the applicant. Applicants who successfully complete the drug screening will not be charged for the

screening. However, applicants who fail the screening will be charged for the test and will have to wait at least six months to reapply.

The screening is a requirement. Eligible applicants who fail to provide a successful drug screening in a timely basis will lose their reserved slot in their desired program of study.

Finally, the College reserves the right to have any enrolled student screened for illicit drug use based upon reasonable suspicion and through random drug testing.

If a student is requested to be screened, he/she will not be allowed back in the class until proof of screening. Enrolled students who fail the drug screening will be dismissed from school and will be charged for the cost of the drug screening.

## **Selection of Students**

The following represents a priority listing of the selection criteria for admission to Thaddeus Stevens College of Technology:

- Family status; indigent orphans given preference
- Financial need
- Academic achievement
- Entrance evaluation results
- Number of applicants for the program
- Date application is received (qualified Stevens Grant students given preference)

## **Summer Program**

### **Academic Bridge Program**

A summer session for academically underprepared students, who meet specific admission requirements, is available in a 5-week term from late June through early August. These courses are for students who need to develop basic educational skills before the start of the regular semester. Counselors, mentors, and tutors are also available for students who need additional support.

At the conclusion of the summer semester, students are evaluated for academic and personal progress. Those who successfully complete the summer program are recommended for matriculation into degree programs in the fall.

### **Academic Program**

A 10-week summer session is available for students who want to make progress in their degree program. Credit-bearing courses in science, math, and/or computer instruction may be offered.

Entry into the summer program is determined by the director of admissions.

## **Pre-Major Program**

Students whose placement evaluation indicates a deficit in foundational skills associated with reading, writing, and/or mathematics are required to successfully complete foundational courses before acceptance in technical

programs. Success in a foundational course is indicated by earning a grade of "C" or better in all foundational courses and achieving required COMPASS test entrance scores. Foundational students who do not achieve successful COMPASS test scores may request a waiver for demonstrated academic achievement at the college level.

Students enrolled in foundational courses will be scheduled for courses during the fall and/or spring semester or may qualify for TSCT summer program.

Foundational courses are calculated in the students' overall course load and applicable in determining full-time or part-time status and meeting financial aid standards. However, credit hours earned do NOT tabulate toward graduation credits and are considered foundational courses. Students earn a grade point average that is based on their overall cumulative level of performance in each course. Grade point averages in foundational courses remain separate from those earned in college-level courses. Foundational courses have a 0 level designator.

Entry into the pre-major program is determined by the director of admissions.

## **Re-Enrollment**

Students who have attended Thaddeus Stevens College and wish to re-enroll must apply for re-admission through the Office of Admissions. Appropriate fees must again be paid. Graduation requirements are those in effect at the time of re-enrollment. Special circumstances may be appealed to the vice president for academic affairs. Students are reviewed by several offices and may be asked to complete additional steps.

## **Financial Assistance**

Students at Thaddeus Stevens College may be eligible for the following financial aid:

- Pell Grants (federal)
- Pennsylvania Higher Education Assistance Agency (PHEAA)
- Federal Stafford subsidized and unsubsidized student loans
- Parent Loans for Undergraduate Students (PLUS)
- Scholarships via various donors
- Student alternative loans
- Thaddeus Stevens Grant
- Federal Supplemental Educational Opportunity Grant (FSEOG)

Information and application forms may be secured from the Office of Financial Aid and Registration, located in Room 105, Hartzell Hall.

## **Grade Level Advancement Policy for Stafford Loan Consideration:**

- Students that are in the pre-major program or in the first year of their program are eligible to borrow up to



\$5,500 as a dependent student or up to \$9,500 as an independent student.

- Students that are in the second year of their program are eligible to borrow up to \$6,500 as a dependent student or up to \$10,500 as an independent student.

The Office of Financial Aid and Registration, located in Hartzell Hall, also provides assistance in completing applications.

### **Thaddeus Stevens Grant Policy**

The Stevens Grant assists those students that are financially disadvantaged. To be eligible, students must complete the Free Application for Federal Student Aid (FAFSA) by July 1st for the fall semester and November 1st for the spring semester. All requested and required paperwork such as; verification paperwork, signatures on the FAFSA, discrepancy documentation, etc. must be completed by October 1st for the fall semester and February 1st for the spring semester. Our priority deadline is April 1st of each year. Those that qualify for the Federal Pell Grant will be awarded the Stevens Grant. Students may receive the Stevens Grant for a maximum of 4 semesters. Students that are admitted to the college in the pre-major program may receive the Stevens Grant for a maximum of 6 semesters. Students that are degree seeking, taking 12 or more credits and working towards degree requirements are eligible for the Stevens Grant. Students that are taking the full load of their program courses in any given semester according to their model schedule which results in being enrolled in less than 12 credits and have met all general education graduation requirements will be eligible for the Stevens Grant but only a prorated amount. This is subject to review each semester based on changes to program curriculum. Please see the Financial Aid Office for questions regarding your eligibility. Students who qualify for the Pell Grant will still receive the Stevens Grant but will also have a loan in the amount of the students Expected Family Contribution (EFC). If a student's EFC is zero they will not need a loan to cover their costs. Students are also required to provide PHEAA (the State Grant Agency) with any necessary paperwork that is requested to determine their State Grant eligibility. Students that fail to follow up with PHEAA will have their Stevens Grant reduced by the maximum amount their State Grant could be. For Resident students the grant will cover the remaining costs of Tuition, Room and a 7-day meal plan that is not covered by Pell, PHEAA, VA Assistance, any outside scholarships and the loan that is equal to their EFC. For Commuting students the grant will cover the remaining costs of Tuition and a 5-day meal plan that is not covered by Pell, PHEAA, VA Assistance, any outside scholarships and the loan that is equal to their EFC.

All Financial Aid that the student receives eg. Federal Pell Grant, PHEAA State Grant, EFC replacement Loans or any

outside scholarship/grants will be applied to the student's account first. The Stevens Grant will then cover any remaining charges.

Students will also have all of their textbooks that are needed lent to them by the instructor of the course on the first day of classes. The books must be turned back in upon the semester ending or the student will be responsible for the replacement fee of the book. Students will also be lent their tools by their instructor on the first day of classes. If a student withdraws or is dismissed prior to graduating, the student will be required to return their tools or be charged a replacement fee. Students that graduate from their program, will allowed to keep their tools. Any student who receives the Stevens Grant must complete 10 hours of community service each semester they are receiving the grant. If a student fails to achieve a 2.00 GPA during a semester they receive the Stevens Grant they will lose the grant for one semester and may have it reinstated once they have lost it for one semester.

Any student that does not abide by the College's Code of Conduct is liable to lose the Stevens Grant for one semester. If a student withdraws or is dismissed during the first 5 weeks of the semester their Stevens Grant will be prorated based upon the business office policy and refunds.

Students must complete a minimum of 12 credits each semester they have the Stevens Grant. They are not required to pass 12 credits, but must attend a minimum of 12 credits for the entire semester. If a student has 12 credits, withdraws from 3 credits, they would not meet the requirement of completing 12 credits.

If a student leaves during the first two weeks they only are charged 30% of their costs. Therefore, a student would only receive up to 30% of the Stevens Grant. If receiving 30% of the Stevens Grant would result in a refund the Stevens Grant would be reduced to zero the student out. If a student leaves during the third week they are only charged 40% of their costs. Therefore, a student would only receive up to 40% of the Stevens Grant. If receiving 40% of the Stevens Grant would result in a refund the Stevens Grant would be reduced to zero the student out. The fourth week is 50% After the fourth week students are charged the full amount and receive the full amount of the Stevens Grant unless the Grant would create a refund.

### **Loss of Stevens Grant**

Below are infractions of the College Code of Conduct which will result in loss of the Stevens Grant for at minimum one semester. Items with an asterisk (\*) can be heard by the restorative justice board and students may have their Stevens Grant reinstated.

Students may lose their grant if they are involved in one (1) of the following major and/or a series of minor violations:

- Sexual assault
- Sexual harassment\*
- Theft\*
- Misuse and/or sale of prescription drugs
- Inflammatory or inappropriate racial comments or actions\*
- Use of illicit substance(s) (i.e., marijuana, heroin, cocaine)
- Purchasing/selling alcohol to a minor
- Underage drinking (2nd offense)
- Physical assault\*
- Possession/use of weapon\*
- Blatant disrespect directed at Thaddeus Stevens College personnel and/or contracted service personnel
- Destruction of property\*
- Failure to show ID (2nd offense)\*
- Failure to clean room within the College's expectations (2nd offense)\*
- Behavior off-campus when representing Thaddeus Stevens College which results in harm/damage to the College's name and reputation (i.e., at athletic events, organization trips, community service, business visitations)
- Failure to complete community service obligation
- Visitation violation (2nd offense)\*
- Four minor violations
- Committing a major violation of the Code of Conduct while on probation.
- Failure to attend counseling sessions as deemed necessary by the Office of Student Services, director of residence life, and/or counselors
- Major vehicle offenses aside from parking violations (i.e., speeding, erratic driving)

## Academic Progress

Students attending Thaddeus Stevens College of Technology who wish to receive financial aid, in addition to meeting other eligibility criteria, must be in good academic standing and making satisfactory academic progress in their degree or certificate program. Student academic progress (SAP) will be reviewed at the end of each term or semester once grades are posted. Future financial aid disbursements will be on hold until SAP requirements are satisfied.

### a. Quality of Progress: Good Academic Standing

Students requesting aid must maintain the GPA requirements listed below. If students fall below the requirements listed below, they will be placed on financial aid probation for the following semester in which they must bring up their GPA to the requirements listed below.

If students fail to meet the requirements during the probation period, they will lose their financial aid until

they have met the requirements listed below. Loss of financial aid includes Title IV funding and institutional funding.

Minimum Required at TSCT Cumulative Credit Hours Earned:

1.0.....	Up to 12
1.20.....	13–24
1.40.....	25–36
1.60.....	37–48
1.80.....	49–60
2.00 .....	61 or greater

### b. Quantity of Progress: Pace of Unit Completion

TSCT students must complete at least two-thirds (67%) of all units in which they originally enroll from the time of first attendance in their program. Thus, a first-term TSCT student who originally enrolls in nine units, withdraws from three units, and successfully completes the remaining six units, would be meeting the quantitative measure requirement since the student did pass at least two-thirds (67%) of the units in which he/she originally enrolled.

Students requesting aid must make progress toward a degree as follows:

- Full-time: 12 units per term and/or 24 units per year (complete average of eight per term)
- Three-quarter time: Nine units per term and/or 18 units per year (complete average of six per term)
- Half time: Six units per term and / or 12 units per year (complete average of four per term)

The following grades are considered to demonstrate satisfactory course completion: "A," "B," "C," "D," and Pass.

These grades do not demonstrate successful course completion: "F," No Pass, Incomplete, Withdrawal, and In Progress.

Incomplete grades will not count toward student completion rate (pace) in the term in which they are received but will be evaluated the following term.

If students fall below the cumulative minimum 67%, they will be placed on financial aid probation; such students will be given the following term (semester) in which to raise their cumulative completion rate above the required 67%.

If students fail to meet the requirements during the probation period, they will lose their financial aid until they have met the requirements listed below. Loss of financial aid includes Title IV funding and institutional funding.

**c. Quantity of Progress: Maximum Time Frame**

Students must finish their academic program within 150% of the published length of the program.

For example, a full-time student in a 61-credit hour associate degree program should be able to earn the degree in three years taking no more than 92 credits.

**d. Appeals**

All students have the right to appeal. This may be done by completing an appeal form and submitting it to the Office of Financial Aid and Registration. The director of financial aid will review cases on an individual basis to determine if mitigating circumstances are responsible for poor progress. Mitigating circumstances may include but are not limited to illness or injury of the student or death of a close family member. All circumstances must be documented. Students will be informed in writing of the appeal outcome. In the case of a denial, students will be informed in writing of what they must do to be reinstated for financial aid. Anyone who is reinstated will be considered to be making satisfactory academic progress during the period of reinstatement but will be re-evaluated after that period. Unsatisfactory determinations made by the director of financial aid may be appealed to the vice president for academic affairs. The decision of the vice president is final.

**Student/Course Transfer**

Students who desire to transfer credits to Thaddeus Stevens College of Technology (TSCT) must have taken the classes at a college that is accredited by a regional or national accrediting agency and must have earned a grade of "C" or higher in those classes. Students may only transfer general education classes. All classes that are non-general education classes must be taken at TSCT. Transferred classes are recoded with a "T" (transfer credit) in place of a merit grade. These classes do not factor into a student's GPA.

Students should request that the college(s) where courses were taken mail an official transcript to the Office of Financial Aid and Registration at Thaddeus Stevens College. The Office of Financial Aid and Registration will evaluate all course descriptions. The registrar reserves the right to request a syllabus and/or additional information in determining course transferability. The Office of Financial Aid and Registration will notify students, as well as their advisor, as to which classes meet the requirements for transferring.

**Transfer to 4-Year Institutions**

Students who have earned college credit can sometimes transfer those credits to other colleges/universities since Thaddeus Stevens College of Technology is accredited by Middle States. Students should contact the college/university they are interested in transferring to in order to determine what credits will transfer. Information on articulation agreements is available in the Academic Affairs Office.

**Tuition and Related Costs**

Thaddeus Stevens College reserves the right to change the tuition and other costs/fees as required. Contact the Office of Admissions for the latest figures.

Tuition and related fees are determined by the Thaddeus Stevens College Board of Trustees.

Students not fulfilling contractual obligations will not be allowed to continue the following semester. Contractual obligations include charges for outstanding library fines, residence hall charges, charges for damaged or lost property belonging to the College, bookstore obligations, and payment of tuition, room and/or board.

**Related Fees**

Application Fee/nonrefundable .....	\$45
Student Activity Fee/nonrefundable:	
(due with agreement for admission) .....	\$30
Parking Permit Fee/nonrefundable	
(optional): .....	\$15
Replacement ID Card Fee .....	\$5
Temporary ID Card Fee .....	\$3
Overdrawn Check Fee .....	\$31
Late Payment Fee .....	\$50
Diploma Reprint .....	\$10
Transcript Fee (each, after 2nd transcript) .....	\$4.25

The Business Office will bill students for all claims for damages to or loss of College property as the damages or losses occur, as well as at the end of the academic year. Students are responsible for paying these charges within 30 days from the date of the billing. The Business Office will assess a late payment fee of \$50 per month against any student with a delinquent balance.

The College will seal all student records until claims for damages and/or loss of school property are settled. Students with delinquent accounts will not receive grades, transcripts, or degrees until they pay their outstanding balance in its entirety. Furthermore, the College will turn all delinquent accounts over to the Attorney General's Office for collection.

**Tuition Payment Plan**

Students may pay their tuition in its entirety by the beginning of the fall/spring term or in 3 equal installments as follows:

- approximately 1 month prior to the start of the semester
- at registration, or, in the case of the spring semester, on or before the 1st class day
- one month after registration with the final spring payment due 1 month after the first class day

To be eligible for the payment plan, the student must make the first payment on time. Exceptions to this will only be granted by the vice president for finance and administration.

## Books and Supplies

Students are required to buy books and supplies. Students who receive the Thaddeus Stevens Grant will have their books loaned to them; students must return the books or pay for the purchase of the books when their course or program of study has been completed. If books are not returned, the cost for the books will be charged to the student's account and remaining unpaid balance will be referred to a collection agency.

Textbooks are available at competitive prices through the College's bookstore provider online or at the bookstore location. Prices of books and supplies vary according to each major.

## Tools

When students are accepted into their majors, they are expected to buy all required tools or supplies. A list of required tools will be located on the College's website. These purchases must be made prior to the beginning of the fall semester and will be listed on the website under the appropriate course of study for the current semester.

Students who receive the Thaddeus Stevens Grant will have their tools loaned to them. Upon successful completion of their first year of study, the College will award students with these tools. Students who do not successfully complete their first year of study must return the tools. If these tools are not returned, the cost of the tools will be charged to the student's account and any remaining unpaid balance will be referred to a collection agency.

## Refunds from College Termination

Students who wish to decline admission or who withdraw from the College are required to notify the College 14 days prior to the first day of classes to receive a 100% refund. Students who notify the College in writing of their denial of admission or who withdraw from the College fewer than 14 days before the first day of class but before the first day of class will be charged 20% of their tuition and room charges for that semester. Students who do not notify the College in writing prior to the first day of classes of their denial of admission or who withdraw from the College will be charged 50% of tuition and room charges for that semester.

In the event of withdrawal from classes prior to the completion of the semester, tuition, room, and board charges will be reduced according to the following refund policy:

## Institutional Refund Policy

This policy applies to Tuition and Room charges:

Withdrawal Date

Up to two weeks prior to semester start date: .....80%

Up to one week after semester start as a no show: .....50%

Up to two weeks after semester starts in attendance: .....70%

Two to three weeks after semester starts in attendance: ...60%

Three to four weeks after semester starts in attendance: ..50%

This policy applies to Meal Plan Charges:

Withdrawal Date

First week of the semester: .....70%

Second week of the semester: .....60%

Third week of the semester: .....50%

Student activity fee is not refundable.

Note: Federal regulations require that for students receiving Title IV Financial Aid (Stafford Loans, unsubsidized loans, PLUS Loans, and Federal Pell Grants) the institution must calculate the percentage and amount of Title IV assistance the student did not earn as of the student's official withdrawal date. For students who did not notify the institution of the intent to withdraw, the last recorded date of attendance will be used.

Unearned funds must be returned to the appropriate financial aid program by the institution or the student or both in the following specified order: unsubsidized federal Stafford Loans, subsidized federal Stafford Loans, unsubsidized direct Stafford Loans (other than PLUS Loans), subsidized direct Stafford Loans, Perkins Loans, federal PLUS Loans, direct PLUS Loans, federal Pell Grants, and FSEO Grants. The exact provisions of this regulation are available in the Office of Financial Aid and Registration.

PHEAA State Grant refunds will be calculated according to the institutional refund policy and appropriate amounts will be returned to PHEAA.

The student is responsible for all claims of damage or loss of school property. A student who is withdrawing from the College must go to the Business Office and pay the outstanding balance on his/her account to avoid late payment fees. The College will refer all delinquent accounts to the Attorney General's Office for collection.

## Leave Policy

A leave is granted only one time. Students are permitted to interrupt their program of study and return the following year at the beginning of the semester in which they previously withdrew.

## Thaddeus Stevens Grant Students

Recommended students who qualify for the Thaddeus Stevens Grant are eligible for only four semesters of the Grant or six semesters for those students admitted to the one-year pre-major program. Prior to completing a full semester, students who are granted a leave of absence will not have that semester count as one full semester.

However, eligibility for financial aid and the Stevens Grant is determined on a yearly basis with respect to the current admissions procedure. Therefore, students on leave will need to provide the Office of Admissions with a letter stating their intent to return with the required financial documentation prior to the semester in which they wish to enroll.



Students who wish to enroll in the fall semester should submit their letter and financial documentation by the preceding March, and students who wish to enroll in the spring semester should submit their letter and financial documentation by the preceding November.

### **Non-Thaddeus Stevens Grant Students**

Tuition students who are granted leaves of absence will be granted refunds according to the tuition refund policy as stated in the catalog.

A leave of absence may impact a student's insurance coverage, veteran's benefits, and financial aid. Therefore, students should review these changes with appropriate personnel before deciding to take such a leave.

### **Medical Leave**

Students who have a medically documented condition which prevents them from performing their course requirements may request a medical leave. Specifically if a student becomes ill, requires hospitalization, or has scheduled surgery with extended rehabilitation that will cause the student to miss five to 10 days of class, the student may need to take a medical leave of absence.

Leave approval is initiated by the student meeting with the counseling/disabilities coordinator. After the student's circumstances have been discussed and any related documentation reviewed, the counselor/disabilities coordinator will consult with the vice president for academic affairs and individuals involved with the student to determine any possible interventions or concerns. Once reviewed and approved, the counselor/disabilities coordinator will notify the Office of Admissions and the registrar that the student is taking a leave.

When the student plans to return, the student will need to contact the counselor/disabilities coordinator and schedule a meeting to review documentation related to the student's treatment, discharge, and clearance to return to college full-time in the student's chosen program. Students who were approved for a medical leave are approved to return to the program in which they were enrolled at the beginning of the semester in which they withdrew. Students who take a medical leave and also request to change majors are reviewed by the director of enrollment services as readmissions and are considered as applicants based on the new programs requirements and are not guaranteed readmission.

### **Financial**

Students who develop financial difficulties and are unable to continue due to their need to work full-time may be granted a financial leave of absence. In order to qualify for this leave, students will need to provide documentation of their attempts to obtain financial aid and loans and the nature of their debts. All other avenues to address the difficulty may be reviewed prior to granting the leave.

### **Family Hardship**

Students may be granted a leave of absence for a family hardship, where they are needed at home due to the illness of a family member or where a major change in the financial status of their family requires them to work. In order to qualify for this leave, students will provide letters from a physician, a letter from an employer, or other acceptable documentation.

### **Legal**

Students who are involved as defendants or witnesses in a lengthy court case may be granted leaves. Students who are incarcerated for a period of time beyond 5 days or over 22 hours of technical course time may be granted a leave or be required by Thaddeus Stevens College to take a leave.

In situations where a student's offense may impact on the safety of other students, the College may require that the student provide documentation of treatment or that the student's assigned counselor is permitted to maintain contact with the student's probation officer or other off-campus professionals during the time the student is enrolled at Thaddeus Stevens College.

### **Leave Procedure**

The student reports to his/her assigned counselor to request a leave of absence. The counselor reviews the leave procedure with the student to clarify the student's responsibilities. Students who are returning from an approved leave will need to contact the registrar to develop a schedule and register once they have completed their admission requirements and have been admitted.

The counselor documents a reason for requesting the leave and informs the student of the specific documentation needed.

The counselor contacts each of the student's instructors and the academic advisor in writing and asks them to document the student's current grades, attendance record, and their recommendations regarding the student's return to continue in his/her current program or another technical program.

The counselor obtains information from the Business Office and the Office of Financial Aid and Registration which impacts the student's ability to return and related conditions.

The counselor collects the information from all areas, and along with his/her recommendation, forwards the information to the vice president for academic affairs for review and approval.

The Vice President of Academic Affairs forwards his/her recommendation to the President for review and approval.

The President's Office then sends a letter to the student stating approval or disapproval. Copies of this letter are sent

to the Office of Financial Aid and Registration, the Office of Admissions, academic advisor, and counselor prior to the semester in which the student expects to return. The student submits all required financial documentation and a letter to the Office of Admissions requesting that he/she be readmitted to continue his/her program of study. Students must submit this information by March prior to returning in the fall semester and by November prior to returning in the spring semester.

The Office of Admissions will notify any student who has not submitted his/her information that he/she is no longer being considered for readmission.

The registrar is responsible for notifying all academic advisors and technical instructors of the student's enrollment status.

### **Procedures To Withdraw From A Class**

Students may withdraw from a class between the beginning of the second week and the 14th week of a semester. Students will receive a "W" grade that will appear on the transcript but not impact their GPA. Failure to follow the steps below could result in still being charged for the semester in which students were enrolled but did not attend.

Students should meet with their academic advisors for consultation concerning the effect(s) withdrawing will have on their continued studies and transcript records. Students should return any materials or properties of the College that they may have in their possession to the appropriate parties, to avoid being billed for those items.

Students who earn an "F" for cheating in a course may not withdraw from that course.

### **Procedure for withdrawal from College**

Prior to making the decision to withdraw from Thaddeus Stevens College, students are encouraged to discuss this decision with a counselor. A counselor can assist students with developing alternative plans to remain enrolled, as well as help students understand how withdrawing may affect future educational plans, financial aid, insurance coverage, etc.

All students who wish to withdraw from the College must do the following:

- Meet with a financial aid staff member to complete an exit interview if they were a recipient of a Stafford Loan.
- Visit all College offices with which they have outstanding obligations.
- Resident students are required to notify their residence hall advisor. The room key should be given to their residence hall advisor. If the student's residence hall advisor is not available, the room key should be forwarded to the director of residence life or the director of student services. Resident students must

vacate the campus by 4:30PM the day following the notification of withdrawal. (IMPORTANT NOTE: In some instances, students will be asked to depart the evening of notification of withdrawal or perhaps immediately.)

### **Employment Opportunities**

Some students take advantage of the many opportunities of working while attending Thaddeus Stevens College. See Student Services hiring and application details.

### **Veteran Administration Benefits**

All full-time programs at Thaddeus Stevens College of Technology are approved for veterans. If eligible for education benefits as a veteran or as a child of a deceased or disabled veteran, the student should adhere to the following procedures to ensure receipt of benefits in a timely manner:

Contact the local VA office, discuss school plans with them, and obtain an application for benefits.

Provide VA Certifying Official at Thaddeus Stevens College with documentation of benefits and a copy of the DD214, if applicable.

Once the student has reported for classes, the College will certify enrollment to the Department of Veterans Affairs.

### **Previous Education/Training**

Appropriate credit is given for comparable previous education and training; thus, the training period is shortened accordingly. Further information is available in the Office of Financial Aid and Registration.

### **Tuition Refunds/ Credits When Called into Active Duty**

Whenever students, as members of the Pennsylvania National Guard or reserve component of the Armed Forces of the United States, are called or ordered to active duty, a leave of absence must be granted.

The students, when released from active duty, are entitled to and restored to the educational status previously attained without any loss of credits earned. The College will refund tuition and fees paid or credit the tuition and fees to the next semester or term after termination of military leave at the option of the student.

The College will give students the option of a 100% refund of tuition and fees or a credit for the next semester's tuition and fees. If students take a refund and return, the refund shall be at the existing rate.

### **Assistance with Financial Aid Applications**

Assistance in completing the financial aid application is available from the Office of Financial Aid and Registration.

# campus life



## Learning Resources Center

The Kenneth W. Schuler Learning Resources Center (LRC) is open to all members of the College community. Its purpose is to provide the information, resources, and services necessary to support the educational mission of the College. The library provides access to traditional resources in the LRC facility during posted operating hours and offers access to a variety of electronic formats 24 hours a day, seven days a week through the library's home page, [www.stevenscollege.edu/library](http://www.stevenscollege.edu/library).

There are computers loaded with Microsoft Office applications and specialized technical software available for student use in the library. Each student is provided with a personal computer account and has access to the internet, e-mail, and library resources from any computer or computer hookup on campus. Additionally there are group study rooms with AV equipment and internet connections for students to use. The library also offers wireless connection capabilities.

In addition to the library, the facility includes a seminar room, and two tutoring labs—math and English—as well as the computer information classroom/lab, and faculty and staff offices. All are housed in a modern 36,000-square foot facility located in the center of campus.

## ID Card Policy

The materials in the LRC are available for the use of Thaddeus Stevens College students, faculty, staff, and alumni. The collection is open to any member of the College community holding a valid College photo ID card. This ID card must be presented at the circulation desk for all library transactions.

To protect our patrons, the library cannot accept College IDs that are broken, taped or do not clearly show the name, picture, and ID number.

## Library Behavior Policies

To maintain an atmosphere conducive to study and other academic pursuits, the noise level in all areas of the library must be kept to a minimum. Conversations should be kept at a low level. Headphones are required when listening to music or sound files; this includes not only the library computers but personal computers, media devices, etc. No one else should be able to hear the music or sound files to which a student is listening.

While in the library, cell phones should be turned off or ringers turned to mute or vibrate only. Students should go outside to answer or make a call.

No tobacco products are allowed in the library at any time or in any form.

No sports equipment is allowed in the library at any time. This includes basketballs, cleats, skateboards, cue sticks, etc.

Students should be respectful and cooperative with the library staff at all times.

## Printing Policy

There are two black and white printers in the computer lab for student use. There is currently no charge for black and white printing. The rules and regulations for black and white printing are the following:

No more than one copy of any document can be printed.

No documents longer than 20 pages may be printed without the permission of the library staff on duty.

There is also one color printer. The charge for color prints is \$1.00 per page and requires the assistance of library staff to print.

## LRC (Library) Hours of Operation Academic Year

- 7:00 am to 10:00 pm, Mon.–Thurs.
- 7:00 am to 5:00 pm on Friday
- 2:00 pm to 10:00 pm on Sunday
- The LRC is closed on Saturdays.

Holiday and summer hours vary and will be posted on the front door, library website and in the college bulletin.

There is also a message stating the current hours on the circulation desk phone 717-299-7753.

## Student Academic Support Center

Thaddeus Stevens College offers free tutoring services for ALL courses to ALL students who need and request tutoring. The tutoring labs are located in the Student Academic Support Center, which is an attached wing of the Learning Resources Center (library). Tutoring is provided by professional tutors and peer tutors. English and math labs are open Monday through Thursday from 8 am to 8 pm, Friday from 8 am to 2 pm, and Saturday from 10 am to 2 pm. All students are welcome, and appointments are not necessary.

Students requesting a one-on-one tutor may have their requests addressed by speaking with their instructor, advisor, or counselor. Any student requesting a one-on-one tutor must complete and submit an online Student Request for Individualized Tutoring form. Additional hours beyond those listed above are available by appointment.

Students who are having difficulties are encouraged to seek assistance early. Academic success is afforded to those who recognize their academic struggles and seek help to address them early as well as throughout the semester.

The Academic Support Center looks forward to seeing students in the labs and supporting them in their educational endeavors.



## Housing

### On Campus:

Thaddeus Stevens College of Technology offers on-campus living arrangements in residence halls for approximately 400 students. Students who plan to live in one of the residence halls should bring their own pillows, blankets, linens, bedspreads, mattress pad, fan, and towels. Radios, televisions, and stereo systems are permitted provided they are used in consideration of roommates and other residents of the floor.

All Stevens Grant students are eligible to live on campus. After Grant students are accommodated, any additional rooms are made available on a rental basis to non-scholarship students.

Residence halls have similar amenities including laundry facilities, cable TV hook-up, two computer jacks for internet access, telephone access, and recreation rooms which contain TVs, pool tables, and in some areas, ping-pong tables. All rooms are air conditioned and have fire alarm and sprinkler systems.

Within the dorms, the College expects that students will maintain their rooms in a clean and sanitary condition for the purposes of good hygiene and appearance. Moreover, each residence hall has professional supervision, but within the governing framework, students are directly involved in the operation of their respective halls via an elected Residence Hall Council. As such, students have the opportunity to establish activities; draft policies and procedures; enhance conflict resolution and communication skills; and play an integral role in making the residence halls a wholesome living and learning environment.

Note: A student who requests housing accommodations due to a disability must complete the housing accommodations request form (which is available on the College website) and provide the appropriate documentation to the special needs coordinator for review and accommodations approval.

### Off Campus:

Housing away from the campus is all privately owned and is separate and independent of the College. The College does not own, operate, or supervise these properties. Information regarding off-campus housing is available from the director of residence life.

## Branch Campus

The Thaddeus Stevens College Branch Campus has allowed the College to expand and provide student services in multiple areas. In addition to residential space, there is a recreation center, nursing station, and a computer/study lab available for student use. Student peer tutors are also available during posted hours for academic programs located at the Branch Campus.

## Food Services

### Jones Dining Hall

Thaddeus Stevens College has a spacious, comfortable dining hall that serves 19 meals a week. The dining hall is closed during official school recesses and during the summer, except for the summer college-level education programs from late June to early August.

Tuition students can buy meals on a cash basis or purchase a five- or seven-day meal plan.

### Meal Plans

Students who purchase a meal plan will have their student ID cards activated to use in the dining hall. Thaddeus Stevens College offers two different meal plans for students who wish to eat meals on a regular basis during the regular semesters. The meal plan prices reflect the cost for one year.

#### Academic Year

- 5-Day \$3,260
- 7-Day \$4,120

#### Summer

- 5-Day \$509
- 7-Day \$641

#### Per Meal

- Breakfast \$ 4.60
- Lunch \$ 8.15
- Dinner \$ 8.25

(All prices are subject to change.)

### Vending

Vending machines are located at convenient locations around the campus. Items include beverages and snacks.

### Bulldog Café I and Bulldog Café II

At Thaddeus Stevens College, students always have the opportunity to enjoy a meal or just a quick snack from one of two Bulldog Cafés. Bulldog Café I is located on the first floor of the Schwalm Student Center on the main campus. Bulldog Café II is located adjacent to the main lobby at the Branch Campus.

At times, hours of operation at the Bull Dog Cafés may change to better serve student needs or when conflicting with a campus-wide activity or event.

## The College Store

The College Store is located at the Cence House, immediately adjacent to the main campus on East End Avenue. The store offers items that reflect the pride and colors of Thaddeus Stevens College of Technology. Some items that can be purchased are T-shirts, sweatshirts, jackets, ball caps, and sweaters. Many of the items display the logo of the Thaddeus Stevens College bulldog, the official mascot. The story of the College can also be found online at the College's website.

## College Activities

Participation in campus activities and organizations is encouraged at the College. These activities are designed to enhance interpersonal skills, self-development, and interaction with others from different backgrounds. Students have the opportunity to meet other students, faculty, and staff in a friendly, relaxed atmosphere.

Special campus-wide entertainment include homecoming events, musical events, and various types of popular entertainment. Resident hall activities include pool, ping-pong, and dart tournaments, movie nights, pizza parties, dorm room decorating contests, and various holiday activities.

## Cultural Activities

The College seeks to provide a genuine environment that celebrates diversity and fosters cultural support mechanisms for all students. Monthly events are planned to learn and celebrate diversity including designated events, speakers, and activities. Student groups also contribute in celebrating multiculturalism, including the Black Student Union, Young Lions support group and the Latino Scholars organization.

### The Women's Center

The Women's Center offers a place of solitude for reading and doing homework; a library of feminist and women's history books; a television; a small kitchen; a forum for group discussions, meetings, and workshops; and research sources on career information and employers.

### Human Relations Committee

The purpose of this committee is to provide a positive forum through which issues of diversity, cultural sensitivity, and human relations are recognized, understood, and observed by all members of the Thaddeus Stevens College community.

The Committee works with various constituencies and organizations on campus to promote communication, equity, and acceptance of diverse groups. The Committee identifies and coordinates educational and training opportunities for students and staff. The Committee provides a confidential forum for individuals to discuss concerns that may be of a discriminatory nature and serves as a recommending body with respect to diversity issues in specific cases or for the campus community in general. Committee membership is drawn from all groups representing the College community.

## Athletics

### Intercollegiate Athletics

Thaddeus Stevens College of Technology maintains an athletic program of five major intercollegiate sports: football, cross-country, basketball, wrestling, and track and field. Contests are scheduled against college and university junior varsity teams and junior and community colleges in the mid-Atlantic states. The basketball, cross-country, wrestling,

and track and field programs are presently affiliated with the National Junior College Athletic Association. These affiliations allow the College's athletes to compete in regional and national competition when qualifying standards are met. The football squad in the Seaboard Conference.

### Intramural Athletics

Thaddeus Stevens College of Technology offers a schedule of intramural activities in individual and team sports. The Intramural Committee is comprised of student representatives from each vocational/technical area that organize these activities. Included in the individual activities are a three-point shooting contest and slam-dunk contest. Team-oriented sports include volleyball, basketball, racquetball, and Wiffle ball.

## Student Center

The Schwalm Student Center is one of the focal points of student activity on the main campus. Completely renovated by Thaddeus Stevens College students, the center boasts three floors, offering some of the following attractions: TVs, snack machines, surround-sound stereo, pool tables, foosball, snack area with microwaves, drink machines, lounge/study areas, Bulldog Cafe I, and private offices for student-led activities. The café is open Monday through Friday from 8pm to midnight.

## Multipurpose Activity Center (MAC)

The 61,000-square foot Multipurpose Activity Center features a spacious gymnasium with a primary basketball arena, flanked by courts on either side. Two racquetball courts, an elevated 110-meter track, several coaching offices, a training center, extensive locker room facilities, and seating for approximately 2,000 highlight the center. The MAC also includes a state-of-the-art cardio area and an extensive array of free weights and a separate circuit training area, composed of numerous pin-loaded machines.

## Student Organization Policy

Thaddeus Stevens College strongly supports student organizations that will contribute meaningful experiences for students to enhance their cultural, social, physical, and spiritual development. Such organizations shall be open to all members of the student body. They shall devise rules that will encourage participation of all interested students without requirements that might exclude any member of the student body. The Student Congress shall review and recommend such organizations. The director of student services shall assist formalization of these organizations.

## Student Organizations

### American Design Drafting Association (ADDA)

This student chapter of the ADDA shall operate in accordance with the Articles on Student Chapter Activities as set forth in the ADDA Constitution and By-Laws. The purpose of this chapter shall be to disseminate technical information for improving the science of graphic communications and

design, to initiate and encourage a continued program of education so as to provide self-improvement and progress through increased knowledge, and to foster a spirit of fellowship among its members.

#### **American Institute of Architectural Students (AIAS)**

Promotes excellence in architectural technology, training, and practice while advancing the science of architectural technology. Encourages comradeship, cooperation, and unity.

#### **Boxing Club**

An opportunity to get an excellent cardio workout. Open to anyone who wishes to learn boxing techniques.

#### **Latino Scholars Alliance**

A representative body of students of Hispanic origin, Latino Scholars Alliance is charged with the authority to provide a supportive social and academic network of peers. The organization celebrates the diverse cultures and heritages of Hispanic origin, and membership is open to the entire College community.

#### **Outdoors Club**

For students interested in the great outdoors—everything from archery to turkey calling.

#### **Phi Theta Kappa**

Invitation to join the Beta Nu Delta Chapter honor society is extended to full-time students maintaining a grade point average of 3.5 or higher. Personal enrichment is gained through the organization's four hallmarks of scholarship, leadership, service and fellowship.

#### **Power Source**

Dedicated to all aspects of the Christian lifestyle involving fellowship, prayer, Bible study, and outings.

#### **Residence Hall Council**

A representative body of students initiating and carrying out relevant policies concerning residence life for each residence hall.

#### **Society of Manufacturing Engineers (SME), Chapter S228**

First-hand experiences linking theory and application with industry needs.

#### **Student Congress**

A representative body voicing student opinions concerning cultural and academic life and sharing proportionately in the development of College policy.

#### **SkillsUSA**

An enjoyable competition with students from other colleges that study in the same technical area.

#### **Tech Phi Tech**

Fraternity founded in 1986 to encourage and sponsor development of collegiate activities, community service, and scholarship.

#### **Women in Tech and Trades**

A blend of social and educational activities provided for women on campus. The club sponsors monthly group discussions on various issues of particular interest for women students.

#### **Campus Publications**

The Student Handbook provides information on campus life, institutional policies, procedures, regulations, and student services.

The Campus Bulletin is a regular newsletter emailed to faculty, staff, and students to keep them informed of activities, announcements, and sporting events on campus. The bulletin is posted on the intranet and internet regularly.

Annual Crime Statistics provides information pertinent to campus security information and crime statistics at the College, in accordance with the Student Right-to-Know and Campus Security Act.

Parking Regulations provides information on the registration of vehicles, parking regulations, and payment of fines.

The Stevensonian is the College's annual yearbook.

#### **Student Government**

Participation in student government affords students the opportunity to acquire leadership skills while contributing to the welfare of the Thaddeus Stevens College community. The following represent possibilities for student leadership:

#### **Student Congress**

Student Congress members are elected each fall to express student opinions on campus social, cultural, and academic life. Student Congress prepares proposals and submits them to the director of student services. This student organization also serves as a means of communication between students, faculty, and administration.

#### **Residence Hall Councils**

Residents of each individual residence hall elect a council that is responsible for the initiation and execution of policies governing life in that particular residence hall. The Residence Hall Councils serve as a means of communication between students, residence hall personnel, and administration. Each council plays an important role in establishing activities for residents.

Members of the councils meet at the Joint Residence Hall Council to discuss common issues. All residence halls are responsible for hosting such a meeting at least once during the fall and spring semesters.

### Drug-Free Schools and Communities Act

In support of the national strategy to combat illegal drug and alcohol abuse, Congress has enacted the Drug-Free Workplace and the Drug-Free Schools and Communities Act Amendments, which require that “as a condition of **receiving funds or any other form of financial assistance** under any federal program, an institution of higher education or state/local educational agency must certify that it has adopted and implemented a program to prevent the unlawful manufacture, possession, use, or distribution of illicit drugs and alcohol by students and employees.” Thaddeus Stevens College of Technology has issued the following statement to inform the community of the seriousness of the use and abuse of drugs and alcohol and to set forth the standards of conduct regarding such activity by students and employees of the institution.

### Community Responsibility

Thaddeus Stevens College of Technology students and employees are both citizens and members of the academic community. As citizens, they enjoy the same rights and obligations that all other citizens enjoy; and, as members of the academic community, they are subject to the rights and obligations that accrue to them by virtue of this membership. Students and employees are expected to be honorable and ethical in every regard and to have consideration for the welfare of others as individuals and for the community as a whole.

### Standards of Conduct

The unlawful manufacture, possession, use, misuse, abuse, or distribution of illegal drugs, alcohol, and illegal prescription drugs without authorization and medical supervision on institutional property or off campus **while conducting any officially sanctioned institutional** activity is strictly prohibited. If found in violation of these standards, students and employees will be subject to severe disciplinary action and may incur penalties prescribed by civil authorities. Faculty and staff, as a condition of employment, must abide by the terms of this policy and report any convictions under criminal drug statutes for violations occurring on or off the premises **while conducting business for the institution within five days** of the conviction.

Sanctions for violation of any of the aforementioned standards imposed on employees may vary from mandatory participation in rehabilitation programs to termination of employment and referral for prosecution.

For students, sanctions imposed by the institution for violations of the above conditions may range from probation up to and including expulsion and referral for criminal prosecution.

### Definition of Illicit Drugs and Alcohol

Illicit drugs refer to certain controlled substances not prescribed by the user's physician, including (but not limited to): marijuana (including hashish); stimulants (amphetamines, cocaine); depressants; hallucinogens (including PCP); opiates or narcotics (heroin, morphine, opium); inhalants (sprays, solvents, glue); and designer drugs (synthetic drugs similar in effect to stimulants, hallucinogens, and narcotics, including GHB and Ecstasy). This list is not comprehensive.

In addition to illicit drugs, illegal prescription drugs that are used without authorization and medical supervision can also pose a serious threat to both the physical and mental well-being of the user.

Alcohol is a depressant that slows the activity of the central nervous system and the brain. Alcohol is a substance regulated by local, state, and federal agencies with respect to its purchase, transportation, consumption, and possession.

### Health Risks

All drugs, including alcohol, can produce serious side effects. This is true even of prescription or other legal drugs when used as prescribed, but their risks are weighed **against their benefits by medical professionals** in the therapeutic context. Prescription drugs used without a prescription and medical supervision can pose a serious threat to the well-being of the user. Because the drugs listed below impair the mind, they increase likelihood of accidents and violent behavior. The many health risks associated with alcohol use are well documented. Small amounts may affect judgment and coordination, impairing performance of even simple routine tasks. The repeated use of alcohol can lead to dependence, with multiple physical, emotional, and psychological complications. Effects of the prolonged use of alcohol may include damage to the central nervous system; malnutrition and anemia; damage to the heart, lungs, and liver; mental disorders; and death.

Health risks associated with the seven categories of illicit drugs may include the following:

- Marijuana: impaired memory, lung and pulmonary damage, chronic emphysema, cancer.
- Stimulants: paranoia, hallucinations, dizziness, headaches, abdominal cramps, malnutrition, overstimulation of the central nervous system, seizures, stroke, heart failure, death.
- Depressants: initial effects similar to alcohol inebriation, slowed reflexes, unstable mood, loss of memory, coma, death.
- Hallucinogens: distortion of reality, including illusions and hallucinations, injury of self or others, convulsions, brain damage, coma, death.
- Opiates (narcotics): skin abscesses, respiratory damage, malnutrition, pneumonia, hepatitis, heart disease, diabetes, coma, death.
- Inhalants: fatigue, weight loss, permanent damage to the nervous system, hepatitis, organ failure.



- Designer drugs: psychosis, instant paralysis and brain damage, death.

In addition, “date-rape” drugs Rohypnol and GHB may cause a weakened or unconscious state often followed by amnesia.

Drug and alcohol abuse can reduce the body's resistance to infections and bring about malnutrition, organ damage, and mental illness. Overdoses of almost all these substances can cause psychosis, convulsions, coma, and death.

## Legal Sanctions

In Pennsylvania, the purchase, consumption, transportation, or possession of alcoholic beverages by a person younger than 21 is punishable by a loss of driving privileges and fines of up to \$300 for the first offense and up to \$500 for subsequent offenses. (18 Pa.C.S.A. § 6308; 18 Pa.C.S.A. § 6310.4.) Misrepresentation of age to procure or furnish alcoholic beverages for oneself is a summary offense punishable by a fine of up to \$300 for a first offense and is a misdemeanor punishable by a fine of up to \$500 for a subsequent offense. All such violations are also punishable by a loss of driving privileges. (18 Pa.C.S.A. § 6307.) Misrepresentation of the age of another for the purpose of procuring alcoholic beverages for that person is a misdemeanor punishable by a fine of not less than \$300. (18 Pa.C.S.A. § 6309.) The intentional and knowing sale or furnishing of alcoholic beverages to a person less than 21 years of age is a misdemeanor punishable by a fine of not less than \$1,000 for a first offense and \$2500 for subsequent offenses. (18

Pa.C.S.A. § 6310.1.) Manufacturing, making, altering, selling, or attempting to sell a false identification card is a misdemeanor punishable by a fine of not less than \$1,000 for a first offense and not less than \$2500 for subsequent offenses. (18 Pa.C.S.A. § 6310.2.)

The penalties for the unlawful possession, use, or distribution of illicit drugs are more diverse than those governing underage drinking and vary depending upon the nature of the drug involved and the nature of the activity. For example, unlawful possession of 30 grams or less of marijuana or eight grams or less of hashish, for example, is a misdemeanor punishable by a term of imprisonment of up to 30 days and a fine of up to \$500 or both. (35 P.S. §780-113[a][31] and [g].)

At the other end of the scale, the manufacture, delivery, or possession with intent to manufacture or deliver heroin or other narcotics is a felony carrying a penalty punishable by a term of imprisonment of up to 15 years or a fine of up to \$250,000 or both. (75 P.S. § 780-104; 35 P.S. §780-113[a][30] and [f][1].) A complete summary of penalties related to unlawful possession, use, or distribution of alcohol or illicit drugs can be found in the Campus Safety Office. Individuals seeking advice regarding drug or alcohol-related laws should consult legal counsel.

## Title IX and Sexual Harassment Policy

Section 1604 of Title VII of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972, and the Pennsylvania Human Relations Act defines sexual harassment in the following manner:

- Sexual harassment involves unwelcome sexual advances or requests for sexual favors and other verbal or physical conduct of a sexual nature constitutes sexual harassment when:
- Submission to such conduct is made either explicitly or implicitly, a term or condition of an individual's employment or education.
- Submission to, or rejection of, such conduct by an individual is used as the basis for an employment or academic decision affecting such individual.

Such conduct has the purpose of affecting or unreasonably interfering with the individual's work or academic performance, or creating an intimidating, hostile, or offensive working, educational, or living environment.

Thaddeus Stevens College of Technology prohibits sexual harassment of its students and employees from any source, including students, employees, visitors, and consultants.

## Sexual Assault Policy

Sexual assault includes any of the following:

- a) Any intentional, unconsented touching, or threat or attempt thereof, of:
  - (i) An intimate body part of another person, such as a sexual organ, buttocks, or breast
  - (ii) Any body part of another person with a sexual organ
  - (iii) Any part of another person's body with the intent of accomplishing a sexual act
- b) Forcing, or attempting to force, any other person to engage in sexual activity of any kind without her or his consent.

Sexual assault is defined and prosecuted as a federal felony offense. Discipline by Thaddeus Stevens College of Technology does not take the place of, or prevent further prosecution by law enforcement agencies.

Our College prohibits domestic violence, dating violence, sexual assault, and stalking.

For reporting possible relationship abuse or sexual assault:

1. Get to a safe place! Do not bathe, shower, nor change clothes.
2. You may contact a campus resource:  
Campus Security: 286-4607; 606-1564  
Title IX Coordinator, Betty Tompos: 391-6947  
Nurse's Office: 391-3561; 606-1541 (Confidential Resource) School Counselor, Deb Schuch: 299-7408 (Confidential Resource)

3. You can also contact confidentially, off-campus, the Lancaster Domestic Violence Center Hotline at 299-11240/299-1249, or the Pennsylvania Coalition against Rape (PCAR) local Sexual Assault and Counseling Center Hotline at (800) 392-7273.

\*You may also contact the U.S. Department of Education, Office for Civil Rights, at (800) 421-3481 or ocr@ed.gov.

### **Vehicle Policy**

All student-operated vehicles are to be registered with the institution within 48 hours of being brought on campus. Parking permits are available from the College's Business Office for an annual fee of \$15. The parking permit fee is nonrefundable. (See Student Handbook and/or Parking Manual for additional information.)

### **Shuttle Services**

The shuttle van is available Monday through Friday for transportation between the Branch Campus and main campus from 6:30 am to 8:00 pm.

Weekends: Students should contact security to obtain a cab ride from campus to campus if needed.

### **Weapons Policy**

Any student found in possession of a weapon will be subject to disciplinary action ranging from suspension to expulsion. (See Student Handbook for further details and definitions.)

### **Rights of Privacy and Access for Students**

College policy safeguards the rights of privacy and access regarding students' educational records as stipulated in the Buckley Amendment (Family Educational Rights and Privacy Act of 1974). Generally, information is not released without the written consent of the student.

The following are released for what is deemed as directory information: Student's name; address; telephone number; date and place of birth; major field of study; participation in officially recognized activities and sports; weight and height of members of the teams; dates of attendance; degrees and awards received; and other similar information.

See other information on the Privacy Act in the Student Handbook. Students who wish to restrict the release of this information must fill out the appropriate form, available in the Office of Financial Aid and Registration.

### **Orientation**

An orientation program, scheduled for new students prior to the start of each fall semester, is designed to answer questions and to help students adjust to the college environment. Students participate in short seminars such as success strategies, diversity, and conflict resolution. Informational sessions are held in the areas of student employment, resident life, campus activities and organizations, general rules and regulations, as well as tutorial, counseling, and other related services.

### **Health Services**

Medical personnel are on duty at the College's Health Office on the first floor of Brenner Hall from 7:30 am until 5:00 pm, Monday through Friday. This service is available to all students. There is no fee for health office services. Serious medical situations are referred to the Lancaster General Hospital or other appropriate agencies. Students are responsible for medical costs incurred at an outside clinic, physician's office, or hospital.

### **Insurance**

The College does not provide health insurance. Students are encouraged to provide their own medical/surgical hospitalization insurance. If not covered by a family policy, the student should purchase an individual policy or participate in a medical assistance program.

Important Note: The College cannot be held liable for medical costs incurred as a result of injury or illness.

### **Student Right-to-Know Campus Security Act**

In accordance with the Student Right-to-Know and Campus Security Act, the institution is required to make readily available information regarding graduation rates and campus safety policies and procedures. Graduation information is obtainable from the director of assessments and accountability, while campus safety information is filed in the Campus Safety Office, the Office of the Vice President for Finance and Administration, and the Office of Student Services. A log of all reported crimes with the names and addresses of those who have been charged in those incidents is available in the Business Office during normal working hours.

# academic information



## Academic Support Services

In the transition from home to college, students may need to discuss their concerns. A variety of resource personnel are available to provide support and guidance to students.

### Academic Center

The College Academic Center provides students with a location to obtain educational advice and assistance Monday through Thursday from 8:00AM to 8:00PM. On Fridays, they are open from 8:00AM to 2:00PM. On Sundays, tutors are available from 1:00PM to 5:00PM. Counselors and advisors are available to support student needs. In addition, materials and presentations are available to support student learning; topics include how to study, how to take tests, how to deal with stress and a number of other subjects for enhancing student learning. The Academic Center is located in Room 104 in the Hartzell Building.

### Act 101

The College participates in the Pennsylvania Department of Education's Act 101 program, a statewide initiative established in 1971 to ensure that residents of the Commonwealth enjoy equal opportunity to pursue higher education. Fewer than 40 postsecondary institutions in the state have this designation. Although many students meet the qualifications, approximately 100 are chosen. Participants are selected based on specific educational and economic criteria set forth by the Commonwealth of Pennsylvania. Act 101 staff closely monitors student progress and provides academic, career, and personal services designed to facilitate collegiate success. Tutors are available to assist students in mastering academic and technical skills required of their programs. The Act 101 program has been promoting student success at Thaddeus Stevens College since 1976.

### Academic Advisors

Each student is assigned an academic advisor. Academic advisement is a vital element of support provided to students by the College's general education faculty. Regular meetings with advisees ensure that students fully understand program requirements, make appropriate course selections, and follow prescribed registration procedures. The advisor/student relationship provides a means for students to seek assistance with both program-related issues and personal matters. The goal is to serve the total student as well as advise students in academic matters. Academic advisors are available during posted office hours and by appointment.

## Assessments

Student participation, performance, and evaluation have been and will continue to be a critical element in assuring the College continues to meet the accreditation standards for accreditation and safeguarding a student's opportunity to apply for loans and grants issued by the federal government. For these reasons, students of Thaddeus Stevens College of Technology are required to participate in critical assessments and evaluations, such as, but not limited to, those listed below:

- National Occupational Competencies Institute Assessment (NOCTI): Technical program pre-test measures technical competencies of students newly enrolled.
- National Occupational Competencies Institute

Assessment (NOCTI): Technical program post-test measures technical competencies of students completing a program illustrating academic growth overtime.

- Automotive Service Excellence Student Certification (ASE): A series of exams that evaluates and certifies competencies as a service professional in the automotive industry.
- ETS Proficiency Profile Assessment: Pre-test measures academic competencies in reading, writing, mathematics, critical thinking, humanities, social sciences, and natural sciences of students who are newly enrolled.
- ETS Proficiency Profile Assessment: Post-test measures academic competencies in reading, writing, mathematics, critical thinking, humanities, social sciences, and natural sciences of students completing a program illustrating academic growth overtime.
- Student Academic Opinion Survey (SAOS): Online survey provides instructors with critical feedback regarding the classes they teach. Identity of respondents is confidential. Graduate Online Survey: Post-graduate survey provides the College with vital information regarding career placement and starting salary. Post-graduate surveys are conducted 1 year, 5 years, and 10 years after graduation.

## Career Services

Thaddeus Stevens College of Technology provides free placement assistance service as administered by the Director of Career Services. The median five-year placement rate of graduates of Thaddeus Stevens College is over 90%. Placement rate is defined as the percent of graduates who are either working in a field related to their major or continuing their education on a full-time basis. Many programs have a 100% placement rate. Students seeking full-time employment upon graduation or Internships during college should see the Director of Career Services in room 106 of the Hartzell Building.

### Career Fair

The college hosts an annual career/job fair in the MAC Building each February. Students are given the opportunity to meet and network with hundreds of employers from across Pennsylvania that have employment vacancies for full-time positions for graduating sophomores and summer internships for freshmen.

### Job Placement

Throughout the year, job vacancies are posted via the college's job-posting website, College Central Network, one of the most comprehensive online recruitment services on the internet. CCN provides a direct connection to full-time, part-time, internship, seasonal, freelance, and volunteer opportunities. All of CCN's services are free of charge to students and alumni of Thaddeus Stevens College of Technology.

### Seminars/Workshops

Seminars and workshops are offered during the academic year to assist students with resume writing, cover letters, interviewing skills, mock interviews, soft skills, internship prep, and self-branding/social media.



## Internships

Designed for second-year students and typically done during the summer between a student's first and second year, an internship is an approved educational program that provides students with academic credits for work done in their field of study. Students are required to have completed a minimum of 12 credits in their program major and have earned a 2.5 GPA or higher to participate. Internships are available on and off campus throughout the year. Information regarding internships may be obtained by visiting the Career Services office in the Hartzell Building.

## College Transfer

The Career Services department assists students who are interested in transferring to a 4-year college or university after graduation from Thaddeus Stevens College of Technology. The college has a number of articulation agreements with other colleges/universities throughout Pennsylvania. Information regarding transferring to another institution can be obtained by visiting the Career Services office in the Hartzell Building.

## Counseling

Professional counseling service is provided by counselors located in the Hartzell Building. Counselors are available on weekdays. Students are encouraged to schedule appointments to assure counselor availability. Generally, counselors provide personal and academic counseling as well as referral and coordination with community-based providers as needed. Examples of concerns for which students seek counseling are depression, stress, anxiety, family and relationship difficulties, poor study skills, poor academic performance, disabilities, and uncertainty regarding career choice.

Counseling services are provided at no additional cost to the student and are offered in a confidential setting where students may freely discuss any concerns. When appropriate, counselors may refer students to community-based providers.

## Mentoring

As part of the college's Network of Student Support, the overarching concept of our Mentoring Program at Thaddeus Stevens College of Technology provides students with an opportunity to connect with other students, faculty, and industry representatives in a more in-depth, safe way to enhance the college experience and drastically increase the retention and academic success of our students.

Each Mentoring Program below has one common outcome: **To improve recruiting, retention and graduation rates.** They are designed to work independently, but in concert with each other maximizing contacts to benefit student success, and

all use common models, processes, and information sharing for coordination and synergy.

### 1. Peer Mentoring (group mentoring)

The Peer Mentoring program is designed to provide students with a smooth transition from one academic year to the next. Utilizing academically successful freshman and sophomore students who have "been there", students are

made to feel included, more comfortable, and have a better understanding of what to expect during their academic journey. Peer Mentors are accessible by other students via email, cell phone, and campus activities/events.

**Pre-major Mentors:** Freshman students who have successfully completed the Premajor program and are now in the freshman year of their technical program major are selected to mentor incoming Premajor students. Pre-major Mentors are coordinated through the Academic Success office.

**Program Specific Peer Mentors:** Sophomore students who have successfully completed the freshman year of their technical program major are selected to mentor the freshman class of their specific program major. Program Specific Peer Mentors are coordinated through the ACT 101 and Community Service office.

### 2. Industry Mentoring (group mentoring)

The Industry Mentor program will provide another outlet for students to connect with a professional in their field of study; someone to encourage and push them to see the correlation between success in the classroom and success out in industry thus increasing retention of those students who may be on the cusp. Via shop visits, virtual connection (Skype, Google, Email correspondence...), mock interviews, Industry Mentors will be a bridge from the classroom to the "real world" answering questions students have about expectations out in industry and providing a link to other industry leaders for job shadows, internships, further education/apprenticeships... Industry Mentors are coordinated through the Career Services office.

### 3. Women's Mentoring (one-on-one mentoring)

Women's Mentors are coordinated through the Women's Center.

### 4. NSF Grant Specialized Mentoring (group mentoring)

The NSF/ATE grant seeks to improve retention by increasing female students' sense of belonging in STEM and at Stevens College through informal group mentoring discussions utilizing female industry role models. This mentoring is open to all students of Thaddeus Stevens College. NSF Grant Mentors are coordinated through the NSF Grant administrators.

## Residential Hall Staff

Professional residential hall advisors assigned to residence halls on the main and Branch campuses. All of these advisors, as well as the director of residence life, are trained in dealing with residence hall issues, certified in adult CPR, as well as in the use of an automated external defibrillator (AED). All issues concerning residence life or housing will be dealt with by this staff, under the direction of the director of residence life. Counseling issues, as would be necessary, are referred to the professional counseling services available on campus.

## Services for Special Needs Students

Students who qualify for admission to the college are eligible for disability accommodations after they have provided documentation and have been approved for accommodations. Not all cited accommodations may

be approved. In keeping with ADA and Section 504 of the Rehabilitation ACT of 1973 specific accommodations may be cited in provided documentation; but not approved if the accommodations are not necessary to avoid discrimination, or relate to a request that would alter / or modify the pace, content or essential skills required for a program of study.

Further, the student, not an individual acting on behalf of the student must disclose. The student is also responsible for following procedures for using accommodations, and has the right to decline accommodations. Disability information is protected under laws such as FERPA and HIPPA; which limits the sharing of information to only individuals who have a specific need to know, and to those individuals whom the student has designated through a signed release. Specific documentation must define the disability in accordance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA), and the Amendment Act of 2009. Documentation must be current, and provide evidence of a disability that affects a major life activity. Specific accommodations should be cited and relate directly to the disability. Accommodations or services provided by community based providers must be approved and coordinated through the Counseling and Disabilities Office. It is recommended that documentation be provided during the application process, prior to enrollment. A Transitional Interview is recommended for all students who request accommodations. Documentation provided by applicants who are not admitted will only be maintained for one academic year. For further information contact Ms. Schuch, at [schuch@stevenscollege.edu](mailto:schuch@stevenscollege.edu) or review information available at [www.stevenscollege.edu](http://www.stevenscollege.edu) under Counseling and Disabilities heading.

## Accommodations

Any questions regarding the approval or implementation of accommodations should be discussed with the Disabilities Coordinator. Any issues will be resolved through discussion among the instructor, Disabilities Coordinator, student, and if necessary the Vice President of Academic Affairs. Grievance Procedure Steps: Students with documented disabilities are eligible for reasonable accommodations in accordance with the Americans with Disabilities Act and Amendment Act (ADAAA). These accommodations are determined by the Disabilities Coordinator in conjunction with the student and his or her treating physician or medical provider. The student then has the responsibility to inform individuals who have a need to know by providing them with a copy of the signed Accommodations Form. If the student has any questions or concerns regarding the nature of any accommodation provided or the process by which the accommodations is being provided, the student may schedule a meeting with the Disabilities Coordinator. In the event the student disagrees with the outcome of any meeting with the Disabilities Coordinator and requests additional review, the student recognizes and agrees to permit information related to his/her disability to be shared with faculty, staff, administrators, and legal counsel to determine appropriate action.

## Challenge of Reasonable Accommodations:

If a student disagrees with any accommodations offered by the Disabilities Coordinator, the student has the right to have the decision reviewed through the following steps:

1) Request a meeting with the Disabilities Coordinator to review documentation, and related accommodations request. A summary of the meeting will be provided to the student with a copy placed in the student's file.

2) Submit a Written Request- If the student does not think the situation is resolved, the student must submit a written request to the Director of Student Services or the VP of Academic Affairs for a review of the situation. The administrators will review the decision made by the Disabilities Coordinator, and the student's concerns to determine if the student's request is denied or approved. A written decision must be provided to the student, and a copy placed in the student's file in the Disability Coordinator's Office, with copies provided to any other individuals involved in providing accommodations to the student.

3) Approved Accommodations- If a student believes that the accommodations she/he has been approved by the College are not being provided or being provided in a manner inconsistent with the approval, the student should take the following steps:

1) The Student should request a meeting with the individual, who is responsible for providing the accommodation to discuss the student's disability and accommodations needs.

2) The Student should schedule a meeting with the Disabilities Coordinator to discuss his or her issues and/or concerns.

3) If the situation is not resolved then the student should request a meeting with the VP of Academic Affairs or Director of Student Services as described above.

At each step of the review process documentation of the decisions and actions taken by the individuals involved in reviewing the decision will be placed in the student's academic file, with copies to those individuals with a need to know. Students are reminded that:

1) Not all accommodations available in high school are available in college.

2) Colleges do have the right to deny accommodations with respect to the specific requirements of a course, or a program of study.

3) Students must initiate the process by meeting with the Disabilities Coordinator, and by providing the documentation requested prior to receiving services.

Note: Revealing a disability to a specific instructor or staff member is not considered disclosure.

4) Accommodations are not retroactive; therefore, students are encouraged to disclose prior to starting classes, and to renew accommodations at the start of each semester, rather than waiting for a problem to develop before requesting services.

## Employment On Campus

Students are employed by the College each year to work in the library, residence halls, intramural programs, athletic programs, student tutors, and throughout the campus.

Student positions sometimes require up to 20 hours of work per week. Job applications are available through the Office of Student Services. (Students are paid at the current minimum wage.)

### **Off Campus**

Local companies call the College during the scholastic year in search of evening and weekend workers. These positions, some of which require specialized technical skills, are advertised by the vice president for academic affairs. In addition, calls are received from private individuals seeking temporary help. Openings are posted on the bulletin board outside the Office of Academic Affairs.

### **Computer Labs**

Many computer labs are found on campus, most of which are dedicated to a specific technical area. A general computer lab, located in the lower level of the Learning Resources Center, serves the campus for computer classes, general assignments, e-mail functions, and internet research and exploration. This lab is available to students at various times during the day and in the evenings until 10 pm.

### **Classification of Students**

#### **Full-Time**

A full-time student must maintain at least 12 credits during a semester. Exceptions require the approval of the vice president for academic affairs.

#### **Part-Time**

Part-time students are those who are registered for fewer than 12 credits. The College will accept part-time, tuition-paying, nonresident students into general education, technical, and evening courses, provided that vacancies exist in a particular area. The tuition rate is by contact hour. Further information is available in the Office of Financial Aid and Registration.

### **Credit Value and Course Numbers**

#### **The semester hour.**

The credit value of courses is expressed in semester hours. Lecture courses are designed to require approximately the same number of hours of class time per week as the semester hours of credits they are assigned. Laboratory based courses are designed to require three times the number of hours of lab time per week as the semester hours of credits they are assigned. A course that combines lecture and lab components requires a mix of the these requirements based upon their distribution of semester hours of credit between lecture and lab. In addition, students are expected to complete a minimum of two hours of "out-of-class" time for each week with every credit of instruction.

#### **Course numbers.**

Each course taught at the College is identified by a code of letters and numbers. (e.g WELD 125) The letters are an abbreviation for the program within which they are found. The three digit numbers indicate the semester in which the student would enroll during their studies. Courses numbered 100 through 149 are usually taken in the first semester; courses numbered 150 through 199 are usually taken in the second semester; courses numbered 200 through 249 are usually taken in the third semester; and courses numbered 250 through 299 are usually taken in the fourth semester.

### **General Education Requirements**

General education courses are required of all majors at Thaddeus Stevens College of Technology. These courses support academic work within the major, enhance employment skills, and help prepare students for full, effective lives as citizens.

Students are required to successfully complete a total of 25 general education credits for graduation. General education courses include the liberal arts and science core and general education applied courses.

#### **Liberal Arts and Science Core**

These courses emphasize theoretical concepts, critical and analytical thinking skills, and numerical and verbal literacy. Students are required to successfully complete at least 18 credits from the liberal arts and science core.

These 18 credits must include 1 course from each of the following 4 core areas:

- Mathematics (MATH)
- English (ENG)
- Science (includes PHYS, BIO, etc.)
- Humanities (includes all SOC, ECON, HIST)

#### **General Education Applied Courses**

These courses emphasize practical application of skills are general in scope and content (non-major specific), support student employability, academic achievement, and student personal development.

Courses include:

- Business (BUSN)
- Computer Information Systems (CIS)
- Health (HEAL)

Students may apply up to 7 general education applied course credits to graduation requirements.

### **Scheduling/Registration**

Because of the number of students who normally register for classes, on-time registration is encouraged. Specific days/times are established for this process. The sophomore class has priority in signing up for general education classes. Students may obtain copies of the model schedule from their academic advisors.

### **Course Selection and Graduation Requirements**

Students are responsible for fulfilling their graduation requirements, whether general education or technical. Academic advisors assist students in planning course selections, but the final responsibility for meeting graduation requirements rests with each student.

With an academic advisor's help, students should schedule and register for the required general education courses listed on their model schedules. Departures from these requirements are only acceptable if approved by the academic advisor and the vice president for academic affairs.

### **Academic Year/Semesters**

The academic year is divided into two sessions of 16 weeks: a fall and a spring semester. Summer sessions are held from May through August for pre-major and program courses.

### **Finals Week**

Although finals are administrated in most technical and general education courses during the last week of the

semester, the regular class schedule is followed. A special final exam timetable is not instituted. Students with questions about their finals or special final projects should discuss them with the instructor of the class during the semester.

## Academic Overload

The normal credit hour load is 19 credit hours per semester. Students who wish to enroll for more than 19 credit hours should complete the course overload request form available in the Office of Financial Aid and Registration. Students who wish to schedule an overload must have the permission of their academic advisor and the vice president for academic affairs.

## Change of Schedule

After a student is officially registered, changes to the schedule may be made through the official policy of adding and/or dropping a course.

## Drop/Add and Withdrawal Policies

Students may drop, add, or withdraw from courses in accordance with the procedures. Students must recognize that dropping, adding, or withdrawing from courses may have serious consequences.

These consequences may include the following:

- Loss of grants (e.g., Federal Pell Grants)
- Loss of full-time student status
- Loss of credit for courses
- Inability to graduate

Students may not be able to make up courses at the College (especially technical courses) unless during the semester that the course is offered. Students must obtain all required signatures on an official drop/add or withdrawal form and turn in the appropriate form to the Office of Financial Aid and Registration by the published deadline. A student who leaves the College without completing and turning in the form may receive failing grades. A student must take a minimum of 12 credits each semester to maintain full-time status.

Options for adding, dropping, or withdrawing are the following:

- A student may add or drop any technical course during the first two days of the semester.
  - A student may add or drop any general education course during only the first week of the semester.
- Grading Policy

Each academic year is divided into two semesters. At the end of each course, instructors submit one grade per course to the Office of Financial Aid and Registration for each of their students. All scholastic information is recorded on the student's transcript, and a grade report for the semester is sent to the student. To protect the confidentiality of a student's record and in compliance with federal law, no grades are given over the phone.

All grades listed below are recorded on the student's transcript. (A grade of "W" will be given if the student withdraws from the course before the assigned deadline.)

Occasionally an "I" grade is reported if circumstances warrant to denote a grade of "Incomplete." If the student receives an

"I" grade, it will not be calculated in the grade point average (GPA). In the event that the student does not complete the work by the fourth week of the following semester, the "I" grade will be changed to an "F" grade unless an alternative arrangement is made with the approval of the instructor and the vice president for academic affairs.

## Grade Point Average

The grade point average (GPA), which appears on the student's grade report at the end of the semester, is based only on semester grades. The grade point average is computed by the following:

Multiply the number of credits per course by the quality point allocation (QPA). See the adjacent table.

Divide the total number of quality points earned for the semester by the total number of credits attempted for the semester to determine the grade point average.

Grade	QPA	Percent	Grade	QPA	Percent
A	4	93+%	C-	1.7	70-72%
A-	3.7	90-92%	D+	1.3	67-69%
B+	3.3	87-89%	D	1	63-66%
B	3	83-86%	D-	0.7	60-62%
B-	2.7	80-82%	F	0	0-59%
C+	2.3	77-79%	I	0 (Incomplete)	
C	2	73-76%	W	0 (Withdrawal)	

## Dean's List

A full-time student with a GPA of 3.25 or above (and no incomplete grades) is placed on the Dean's List at the end of the semester.

## Honors

At graduation, the following distinctions are given:

- 3.25 to 3.34 Honors
- 3.35 to 3.64 Cum Laude
- 3.65 to 3.94 Magna cum Laude
- 3.95 to 4.0 Summa cum Laude

## Incomplete Grades

If, for reasons beyond a student's control, he/she is unable to complete a course within the prescribed time, the grade for that course may be deferred with the approval of the instructor and the vice president for academic affairs. An "I" would appear on the transcript and would not be calculated in the student's GPA. The required work would have to be completed by the end of the fourth week of the following semester.

This option is not to be used to delay inevitable failing grades. To request an incomplete grade, students must obtain a form from their academic advisor and then request the instructor's approval. If approved, the instructor must then submit the completed form to the vice president for academic affairs for approval and signature. All approvals must be completed before the end of the semester.

In the event an "I" grade is not removed by the fourth week of the following semester, the grade is changed to an "F" unless an alternative arrangement is made with the approval of the instructor and the vice president for academic affairs.



## **Grade Report**

Throughout the term, it is now policy at Thaddeus Stevens that all teachers must regularly update grades in the My Stevens College portal. Individual teacher policy, which is located on the syllabus, will define how often teachers will update simple and complex assignments, but students will always have access to their progress in this way.

By the fifth week of the semester, instructors identify for the Vice President for Academic Affairs those students who are in poor academic standing and could possibly fail. A series of steps are then taken by the instructors, academic advisors, and counselors to prescribe actions to alleviate the students' problems in the courses.

Final semester grades are available on the college portal after the end of the marking period. The grade report shows all coursework completed by the student. To protect the confidentiality of a student's record and in compliance with federal law, no grades are given over the phone. The complete procedure for appealing a grade can be found in the Student Handbook.

## **Course Repeat and Program Acceptance Policy**

Students may repeat a course to earn a higher or passing grade. Only the highest grade earned will be used in the GPA calculation.

Definition: The term "repeat" is applied when a student retakes a course that the previously were awarded a grade, including a "W." The first time a student completes a course for a grade is considered the first attempt. The second time a student completes a course for a grade it is considered the second attempt and the first repeat.

## **Developmental Courses**

Students who are required to successfully complete developmental coursework prior to enrolling in their desired major will be given the opportunity to repeat a developmental course one time which includes taking the course at another college or university. Students who cannot successfully pass a developmental course within two attempts will not be permitted to continue into their program of study. Students must pass developmental courses with a C or better. In addition, they must pass the COMPASS test. Students however, are not limited in the number of times they may take the COMPASS test.

## **College-level Courses**

Students may repeat college-level courses to improve a grade, including a "W." Students may only repeat a course two times, which includes taking the course at another college or university. Students unable to successfully complete courses that are required for the graduation requirements of their desired major should discuss alternate graduation plans with their academic advisor.

Students do have the opportunity to appeal this policy to the vice-president for academic affairs if they feel they have extenuating circumstances that prevent them from adhering to the policy.

## **Withholding Grades/Degrees**

The institution reserves the right to withhold a student's grades and/or degree if any loans or fines (for example, parking fines or library fines) are outstanding. Other situations for withholding grades include unmet financial obligations such as tuition fees or destruction or replacement of Commonwealth property. Students with unpaid loans or fines may view their grades in the Office of Financial Aid and Registration; however, no printed copy will be released to such students.

## **Advanced Placement**

The College believes that placing students at the proper educational level will contribute to their success. Advanced placement is designed to give students credit for the learning they have acquired prior to entering

Thaddeus Stevens College. Students who have acquired skills and knowledge through advanced courses in high school, vocational/technical training, military service, or life/work experience, may be eligible for advanced placement.

## **Credit through Dual Enrollment**

Students earn college credit by completing a college-level course at their home school. Usually this course is taken concurrently with a similar high school course of the same nature. Dual enrollment is usually pursued by a traditional student, and a grade is assigned.

## **Credit by Department Examination**

Students who have skills superior to those taught in a required course may qualify for this option. Students may opt to take a "final" test as a means to acquire the credit without the cost and time devoted to a redundant course. Credit by department examination is usually pursued by a traditional student, but no grade is assigned.

## **Credit by Standardized Exams (AP, CLEP, Excelsior, etc.)**

Students may take a nationally-recognized exam for different disciplines, and gain credit at a college that recognizes the test. Credit by a standardized exam is usually pursued by a traditional student, but no grade is assigned.

## **Credit for Life/Work Learning (Portfolio)**

Students may prepare a portfolio of materials (training certificates, work experiences, seminars, businesses, etc.) that defend the acquisition of skills taught in a specific course. Faculty will evaluate the portfolio against the requirements for a specific course. Credit by portfolio for life/work experience is usually pursued by a nontraditional student, and (usually) no grade is assigned.

## **Credit for Military Training**

College credit can be assigned for specific technical training received during military service (electronics, auto mechanics, etc.). Credit for military training is usually pursued by a nontraditional student, and no grade is assigned.

## **Credit for Formal Apprenticeship Training**

College credit can be assigned for the completion of a formal apprenticeship program (machinist, plumbers and pipe fitters, electricians with the IBEW, etc.). Credit for formal apprenticeship is usually pursued by a nontraditional student, and no grade is assigned.

### **Credit by Articulation**

Students may receive college credit for the completion of high school technical training if a formal articulation agreement exists between the high school and Thaddeus Stevens College. Credit by articulation is usually pursued by a traditional student, and no grade is assigned.

### **Credit by Program of Study (POS)**

Students may receive college credit for completion of a statewide program of study (POS) if the College has established such an agreement. Credit by POS is usually pursued by a traditional student, and no grade is assigned.

Interested students should consult the registrar. Eligibility will be determined based upon substantial evidence of prior experience or course work. Advanced placement is then possible through testing and/or competency assessment determined by the appropriate department.

Advanced credit is not used in calculating the student's cumulative grade point average (GPA). Only the course number, title, and the number of credits will be entered on the transcript. No letter grades will be shown. Up to a maximum of half the total program requirements may be granted through nontraditional credit evaluation (advanced placement or credit by exam). Credit will only be granted to full-time students in good standing after one semester. Any exceptions to this policy will be at the discretion of the vice president for academic affairs.

### **Graduation Requirements**

Students are accountable for meeting all graduation requirements. Although faculty advisors will assist in planning and scheduling courses, students bear the final responsibility for meeting all requirements.

Entering students must display basic competencies (reading, mathematics, and written expression) needed to succeed at Thaddeus Stevens College of Technology. Students who do not demonstrate these skills on placement tests will be required to complete specified remedial courses to improve competency levels. Students must obtain a "C" or better in a remedial course in order to move onto college-credit courses.

### **Associate Degree**

To be eligible for an associate degree, students are required to satisfy the following:

- Complete all courses, both general education and technical, as set forth in this catalog as required within a specific technical major. Substituting courses may only be done with the prior approval of the vice president for academic affairs. Only courses numbered 100 and above can be applied toward meeting graduation requirements for an associate degree.
- Earn at least an overall "C" average, a 2.0 cumulative quality point average (out of a possible 4.0), plus an overall "C" average (2.0 cumulative average) in one's technical major.
- Fulfill all financial obligations to Thaddeus Stevens College. Additional Information Students not having earned all the credits required for a degree after four

semesters in a major may enroll in another accredited institution to fulfill requirements. It is strongly encouraged to confirm with the Registrar's Office a course will meet graduation requirements prior to enrolling in a class at another institution.

Any exceptions to graduation requirements must be approved by the vice president for academic affairs.

Graduating students are responsible for knowing and understanding all graduation and commencement requirements. This information includes commencement and rehearsal dates as issued by the vice president for academic affairs. Model schedules and catalog requirements are used to determine degree requirements.

### **Academic Good Standing**

A full-time student must maintain at least 12 credits during a semester and must have earned a "C" average (2.0 cumulative GPA) and a "C" average in one's technical major to be in good standing.

### **Academic Probation**

Students not maintaining an overall 2.0 cumulative grade point average (GPA) and/or a 2.0 cumulative GPA in their technical major at the end of any semester shall be placed on academic probation for the following semester.

At the conclusion of the probationary semester, students on probation must have a 2.0 or better semester GPA in the deficient area to avoid dismissal. If the semester minimum of 2.0 is achieved in the deficient area but the cumulative GPA or the cumulative GPA in the technical area is not above 2.0, students will remain on academic probation. If, at the conclusion of any probationary semester, students have below a 2.0 semester GPA in the deficient area, they will be dismissed from the College.

In order to ensure that students have the ability to monitor their GPAs, both the cumulative total GPA and the cumulative technical GPA will appear on the student's grade report.

### **Academic Dismissal**

Decisions for academic dismissal shall be made by the vice president for academic affairs and will be based on a student's GPA. Students who have not earned a minimum 2.0 grade point average overall at the end of a semester during which the student is on academic probation shall be dismissed from the institution. Students must also earn an overall 2.0 grade point average in their major.

Students are responsible for meeting all requirements of the educational program. Any student not earning a minimum grade point average of 1.5 at the end of the first semester will be liable for dismissal. The student whose GPA is 2.0 or lower at the end of the second semester is liable for dismissal. A student with a GPA of 1.0 or below during the first semester will be dismissed.

Students dismissed from the institution may reapply the next academic year. Students may appeal academic dismissal. This procedure is found in the Student Handbook.

## **Withdrawal from Thaddeus Stevens College Student Initiated**

Students should meet with a counselor, complete a withdrawal questionnaire, and return it to the Office of Financial Aid and Registration. Students should also check with the Office of Financial Aid and Registration to see if they need to provide any information. Students should return all school properties to the appropriate parties. Room keys should be returned to the residence hall director or the director of residence life.

Withdrawing students should vacate the campus by 4:30 pm the day following the notification of withdrawal. In some instances, students will be asked to depart the evening of notification of withdrawal.

## **Administrative Dismissal**

Thaddeus Stevens College reserves the right to end the enrollment of any student if, in the opinion of the College, further association is not in the best interest of the student or the College.

The following may be causes for administrative dismissal of a student:

- Neglecting to meet financial obligations
- Not following the College's policies and procedures
- Failing to meet academic requirements
- Lack of effort or interest; failing to demonstrate safe policies
- Failing to be academically honest

## **Refunds**

To be eligible for a refund, a student must have initiated and completed the entire withdrawal procedure. Refer to refund policy for further information.

## **College Code of Conduct**

Once admitted to the College, students agree to conduct themselves in a responsible manner that corresponds to acceptable mature adult standards of behavior. This code of conduct demands courtesy and respect for all staff and students. Being a member of the College community necessitates understanding and complying with all College regulations and directives while cooperating with those authorized to enforce them.

When students conduct themselves contrary to the best interest of Thaddeus Stevens College, they will be subject to penalties that could include suspension or expulsion. Students whose behavior violates the integrity of the campus, either socially or academically, will be terminated from the College. Additional information about student conduct at Thaddeus Stevens College and the student's judicial process may be found in the Student Handbook.

## **Computer Resources Acceptable Use Policy**

The following policy contains the governing philosophy for regulating the use of the Thaddeus Stevens College of Technology's computing/information network facilities and resources. Access to the College's computing/network facilities and resources is a privilege granted solely to

Thaddeus Stevens College of Technology faculty, staff, registered students, and those with special accounts. All users of the computing/information network's facilities must act responsibly and maintain the integrity of these resources. The College reserves the rights to limit, restrict, or extend computing/information network privileges and access to its resources.

Those who do not abide by the policies listed below are subject to suspension of computer privileges and possible referral to the appropriate judicial process.

The vice president for finance and administration should be notified about potential violations of laws and policies governing information use, intellectual property rights, or copyrights. Computer and network services should be notified about potential loopholes in the security of its computer systems and networks. The user community is expected to cooperate with the computing department in its operation of computer systems and information networks as well as in the investigation of misuse or abuse. Should the security of a computer system or information network be threatened, suspected user files may be examined.

## **Policies**

- Individuals shall use only their assigned network ID unless multiple access has been authorized for the ID.
- Users may use only the password(s) provided to them and shall not try in any way to obtain a password for another user's network ID.
- Users may not attempt to disguise the identity of the account or machine they are using.
- Use of the College's network resources to gain or attempt to gain unauthorized access to remote computers is prohibited.
- Any deliberate act which may seriously impact the operation of computers, terminals, peripherals, or networks is prohibited. Such acts include, but are not limited to, the following: tampering with components of a local area network (LAN) or the high-speed backbone network, otherwise blocking communication lines, or interfering with the operational readiness of a computer.
- No person shall knowingly run or install on any of the College's computer systems, or give to another, a program which could result in the eventual damage to a file, computer system, or information network, and/ or the reproduction of itself. This is directed towards, but not limited to, the classes of programs known as computer viruses, Trojan horses, and worms.
- No person shall attempt to circumvent data protection schemes or uncover security loopholes.
- All persons shall abide by the terms of all software licensing agreements and copyright laws. In particular, unauthorized copying of copyrighted software is prohibited, unless the College has a site license specifically allowing the copying of that software. Furthermore, the copying of site-licensed software for distribution to persons other than Thaddeus Stevens College of Technology faculty, staff, and students, or the copying of site licensed software for use at locations not covered under the terms of the license agreement, is prohibited.

- Deliberate acts which are wasteful of computing/information network resources or which unfairly monopolize resources to the exclusion of others are prohibited. These acts include, but are not limited to, sending mass mailings or chain letters, creating unnecessary multiple jobs or processes, obtaining unnecessary output, or printing or creating unnecessary network traffic.
- The following types of information or software cannot be placed on any College-owned computer system:
  - That which infringes upon the rights of another person.
  - That which may injure someone else and/or lead to a lawsuit or criminal charges. Examples of these include the following: pirated software, destructive software, pornographic materials, or libelous statements.
  - That which consists of any advertisements or commercial enterprises.
- No person shall harass others by sending annoying, threatening, libelous, sexually, racially, or religiously offensive messages. This includes all materials deemed offensive by existing College code of conduct laws.
- Use of the College's computer/information network resources to monitor another user's data communications, or to read, copy, change, or delete another user's files or software, without permission of the owner, is prohibited.
- Use of the College's servers, workstations, or information networks must be related to a Thaddeus Stevens College of Technology course, research project, work-related activity, departmental activity, or for interpersonal communications. Use of these resources for personal or financial gain is prohibited. If the nonbusiness usage of information services results in a direct cost to the College for any reason, it is the individual's responsibility to reimburse the College.
- Any network traffic exiting the College and/or using College resources/infrastructure is subject to the acceptable use policies of the network through which it flows (internet, D&E), as well as to the policies listed here, such as abusing internet service providers (ISP) services using College network/resources. Existing College policies such as the sexual harassment policy, will be enforced as they relate to a violation of the computer use policy.
- Potential violators may also be subject to criminal prosecution under federal or state law, and should expect the College to pursue such action.

### **Consequences**

Violation of one or more of these published policies will result in a loss of access to the College computing/ information network systems with possible referral to the appropriate judicial process as above.

Violators may also be subject to criminal prosecution under federal or state law and should expect the College to pursue such action. As an example, under Pennsylvania law, it is a felony punishable by a fine up to \$15,000 and imprisonment up to seven years for any person to access, alter, or damage any computer system, network, software or database, or

any part thereof, with the intent to interrupt the normal functioning of an organization [18 Pa.C.S. §7611(a)(2) and (3)].

### **Attendance Policy**

Attendance is important for success at Thaddeus Stevens College; therefore, regular and prompt attendance for classes and scheduled conferences is expected for all students.

Instructors distribute attendance requirements in their course syllabi at the beginning of the semester. Students are responsible for reading and understanding these requirements for each course, whether they are general education or technical courses.

The faculty will recognize only the following as legitimate excuses for absence:

- Death in the immediate family
- Hospitalization
- Illness verified by a doctor's excuse indicating the nature of the illness and type of medication prescribed
- College activities as approved by the vice president for academic affairs or director of student services
- Circumstances as verified by a campus counselor

### **Advisory Committees**

Because of the technical nature of the programs of instruction at Thaddeus Stevens College, advisory committees undertake an essential role in technical program review and development, equipment purchases, student recruitment, and student job placement. Advisory committees gather at least twice a year; minutes of these meetings are kept on file in the Office of Academic Affairs. Members of advisory committees include instructors, administrators, business owners, professional and technical employees, and representatives of industry and labor.

### **Changes to Catalog and Curriculum**

The provisions and conditions of this catalog are not to be considered an irrevocable contract between the student and Thaddeus Stevens College of Technology. The College reserves the right to change any fees, requirements, and/or regulations at any time during the student's term of enrollment. Approved curriculum changes may be implemented the semester following approval, provided they do not impact unfairly on the student.



# administration & staff

## Office of The President

### William E. Griscom, , EdD., President

EdD, MA: West Virginia University

MA, BA: Rowan University

Cert.: Salem Technical Institute

## Advancement - Development

### Allen Tate, Director

BA: Elizabethtown College

### Deborah Strubel, Grants

BA: Nyack College

### Pamela McCarty, TAACCCT Grant Administrator

MS: Millersville University

BS: Kutztown University

## Student Services

### Christopher Metzler, , PhD., Dean

PhD: Northcentral University

MEd, BS: Clemson University

### Stacey Caldwell, Administrative Assistant

## Residence Life

### Jason Kuntz, Director of Residence Life

MEd: University of South Carolina

BA: Baldwin Wallace College

### Ernie D. Brown, Residence Hall Advisor

AA: Art Institute of Pittsburgh

### Michael Mahon, Residence Hall Advisor

BA: Penn State University

### Ginene McDowell, Residence Hall Advisor

### Reginald Minter, Residence Hall Advisor

AAS: Monroe Community College

AAS: Thaddeus Stevens College of Technology

Master's Program: Lancaster Bible College

### Will Offer, Residence Hall Advisor

BS: Millersville University

AAS: Thaddeus Stevens College of Technology

## Athletics

### Tony Miller, Campus Service Specialist/Athletics

### Steve Mousetis, Head Wrestling Coach

### Joe Wysock, Head Football Coach

BS: Millersville University

### Head Cross-Country Coach TBA

### Warren Taylor, Head Track and Field Coach

BS: Eastern Mennonite University - Lancaster

S.A.D.: Yorktowne Business Institute

S.A.D.: Thaddeus Stevens College of Technology

### Curtis Cannon, Head Basketball Coach

### Athletic Trainer Certified TBA

## Admissions

### Amy Kwiatkowski, Administrative Assistant

### Dawn Y. Ross, Administrative Assistant

### Megan Dancause, Recruiter

BS: Hood College

### Scott Francis, Recruiter

BA: Millersville University

### Samantha Weitzel

BS: Millersville University of Pennsylvania

### Lori Mahoney, Tour Guide

## Thaddeus Stevens Foundation And Alumni Association

### Alex Munro, Executive Director and Government Affairs

Postsecondary Vocational Diploma: Thaddeus Stevens

College of Technology

### Sophie E. Hower, Administrator

Diploma: Lancaster Business School

### Peg Hess, College Store

## Office Of Finance And Administration

### Betty K. Tompos, Vice President

MBA: Lebanon Valley College

BA, AAS: Franklin and Marshall College

### Sue Emswiler, Human Resource Specialist

### Carrie Harmon, Purchasing Agent 2

### Marjorie Hohrath, Administrative Officer

AAS: Thaddeus Stevens College of Technology

### Jamie King, Fiscal Technician

### Gregory Nixon, Accountant

### Scott Reed, Accountant 2

Diploma: Lancaster Business School

### Penny Wex

## Computer Network and Services Department

### Gregory Seitz, Director of Information Technology

AS: Harrisburg Area Community College

**Gordon Wenger, Systems Administrator**

BS: Eastern Mennonite University

**Jason Benedick, Computer Operator II**

AAS: Thaddeus Stevens College of Technology

**Linsey Smeltzer, IT Generalist 2**

BS: York College of Pennsylvania Cisco Certified Entry Networking Technician (CCENT) LPIC-1: Linux Server Professional Certification

**Facilities****Eugene H. Duncan, Director of Construction Projects and Facilities****Edward West, Utility Plant Supervisor****Raymond Murry, Building Maintenance Foreman****Mike Kauffman, Utility Plant Operator II****Maintenance Services****Tony R. Miller, Director of Buildings & Event Coordinator****Darryl Nunn, Custodial Services Manager****Marketing and Public Information****Adam Aurand, Marketing**

BA: Ithaca College

**Medical Services****Melissa Meshey, Registered Nurse**

AA: Lancaster General Hospital School of Nursing

**Marianne Topka, Registered Nurse**

AA: Mt. Aloysius

**Office Of Academic Affairs****Zoann Parker, PhD., Vice President**

AAS - Agriculture Business

BS - Ag. Education

M.Ed. Training and Development

Ph.D. - Vocational Industrial Education

**Darlene Petersen, Administrative Assistant****Counseling Services****Debra A. Schuch, Counselor,**

Registered Art Therapist (ATR),

Nationally Certified Counselor (NCC)

MCAT: Hahnemann University

BS: Shippensburg University of Pennsylvania

**Enrica Gerhart, Academic Counselor**

Ed.D: Immaculata University MS: University of Scranton

BS: Millersville University of Pennsylvania

**Latinia Shell**

Ed.D: Argosy University

MEd: Millersville University

BA: Millersville University

**Academic Center****Sheri Wright, Director**

MEd: Loyola College

MBA: University of Maryland

BS: Loyola College

**ACT 101 and Stevens Grant Coordinator****Valdijah Brown, Director**

MS: Drexel University

MSW: Temple University

BA: Millersville University

**Assessment and Accountability****Cheryl Lutz, Director**

MA: College of Notre Dame of Maryland

BSEd: Millersville University

AA: Reading Area Community College

**Career Services****Laurie Q. Grove, Director**

BS: Indiana University of Pennsylvania

**Learning Resources Center/Library****Sharon L. McIlhenney, Director**

MS: Clarion University

BA: Millersville University

**Timothy Creamer, Librarian**

Preservation Management Certificate, Rutgers University

MSLS: University of North Texas

BA: Schreiner University

**Suzanne Waddell, Librarian**

MLS: Kutztown University of Pennsylvania

BS: The Pennsylvania State University

**Brenda J. Smith, Library Technician****Office of Financial Aid and Registration****Michael DeGroot, Dean**

MA: University of Phoenix

BS: Elizabethtown College

AAS: Thaddeus Stevens College of Technology

**George Colon, Administrative Assistant**

AAS: Thaddeus Stevens College of Technology

## Non-Discrimination Statement

Thaddeus Stevens College of Technology will not discriminate in its educational programs, activities, or employment practices on the basis of race, color, national origin, sex, sexual orientation, gender identity, disability, age, religion, ancestry, union membership, or any other legally protected classification. Announcement of this policy is in accordance with state and federal laws, including Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and the American Disabilities Act of 1991.

Employees and participants who have an inquiry or complaint of harassment or discrimination, or who need information about accommodations for persons with disabilities, should contact Betty Tompos, Affirmative Action Officer, Thaddeus Stevens College of Technology, 750 East King Street, Lancaster, PA 17602. Phone: (717) 299-7749 or 1-800-842-3832.

## Declaración de No-Discriminación

Thaddeus Stevens College of Technology no discrimina en sus programas educativos, actividades

o en prácticas de empleo debido a raza, color, origen nacional, sexo, orientación sexual, identidad sexual, incapacidades físicas o mentales, edad, religión, linaje, o por ser miembro de una unión

o sindicato, o de cualquier otro grupo protegido por la ley. Esta declaración está de acuerdo a las leyes estatales y federales, incluyendo el Título IX de las Enmiendas de Educación de 1972, las Secciones 503 y 504 del Acta de Rehabilitación de 1973, y el Acta de los Estadounidenses Incapacitados (ADA sigla en inglés) de 1991.

Los empleados y los participantes que tienen alguna pregunta o alguna queja de acoso o de discriminación, o necesitan información para recibir ayuda para personas con incapacidades físicas o mentales, deben ponerse en contacto con Betty Tompos, Affirmative Action Officer, Thaddeus Stevens College of Technology, 750 East King Street, Lancaster, PA 17602. Teléfono: 717-299-7749 o 1-800-842-3832.

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Students are responsible for fulfilling all requirements for graduation set forth by the College. Although an advisor may assist in the planning of a program of study, the final responsibility for meeting the requirements remains with the student.





