Eastern Center for Arts and Technology (EASTERN) is committed to providing our students with career pathway options that suit their skill sets and career aspirations. Our goal for all graduates is placement on the track that they select, which may include going directly into the workforce, an apprentice program, internship, certificate program, post-secondary education, or a combination of two or more. We work closely with our participating districts to provide the highest quality career and technical education possible to our students, and to give them a head start in the path they choose to pursue.

It is our sincere hope that the pages within this Career Pathways Course Guide will provide our participating high school guidance counselors, and parents of potential EASTERN students, with a clear and purposeful understanding of our career and technical programs, their expectations, requirements, and the potential career and postsecondary options available.

We are fortunate to have many business and industry partners who dedicate so much of their time and efforts into making our programs cutting-edge. These partners provide our students with paid internships, apprenticeships leading to successful and high paying careers, interview skills, demonstrations of the newest technologies in the field, and career advice. At EASTERN, we believe our strong industry partners make us the best possible option for students who wish to begin their career-focused education while in high school.

Should you have any questions regarding our programs and their Career Pathways, please feel free to reach out to any of the following administration team or staff members:

**QUESTIONS ABOUT PROGRAM CURRICULUM?**
Contact Mr. Joe Greb, EASTERN’s Assistant Director  
JGreb@eastech.org

**QUESTIONS ABOUT THE ENROLLMENT PROCESS?**
Contact our Supervisor of Career and Technical Education Office  
Ecollins@eastech.org

**QUESTIONS ABOUT BUSINESS PARTNERSHIPS, PAID INTERNSHIPS, APPRENTICESHIP OPTIONS AND COLLEGE CREDIT ARTICULATION AGREEMENTS?**
Contact Ms. Hayley Granacher, EASTERN’s School-to-Career Coordinator  
HGranacher@eastech.org

**QUESTIONS ABOUT PROGRAM RECRUITMENT OR PROGRAM TOURS?**
Contact Mrs. Amy Shields, EASTERN’s Marketing and Recruitment Coordinator  
AShields@eastech.org

And of course, you can always contact me with any issues. We are proud to be a vital part of tomorrow’s workforce, and we can only improve when working together with our participating districts and local business partners.

Sincerely,

Dr. Cathleen Plesnarski, Executive Director  
Eastern Center for Arts and Technology  
CPlesnarski@eastech.org
# Career Pathways

## Course Guide

## Career Clusters

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EASTERN is located in the heart of Eastern Montgomery County, at 3075 Terwood Road in Willow Grove, PA. EASTERN was established in 1965, and offers high-quality continuously evaluated and updated technical instruction, leadership opportunities and specialized services.

Our programs respond to the needs of students and business and industry to provide an environment where students can make career decisions, acquire competitive skills, and prepare themselves for success in the workforce and/or higher education.

Secondary career and technical education programs are offered to students in grades eleven and twelve from the nine school districts in Eastern Montgomery County. These schools include:

Abington
Bryn Athyn
Cheltenham
Hatboro-Horsham
Jenkintown
Lower Moreland
Springfield
Upper Dublin
Upper Moreland

FOLLOW US ON SOCIAL MEDIA!
COMMERCIAL ART

PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to develop the basic skills of graphic design and illustration showcased in a portfolio. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Instruction is done in the computer lab, digital photography studios, as well as through demonstrations, and detailed instructions, using hands on client-based jobs through live work projects. Lecture and classroom activities include the use of project-based learning and students doing research on various industry topics, as well as working in a team environment for large-scale jobs.

This course will develop a well-rounded student in the areas of traditional drawing, digital design and photography based on an individual’s career objective. Students will design or create graphics to meet specific commercial and promotional needs, such as packaging, displays, or logos. A variety of illustration mediums will be explored. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in a post-secondary education environment. College credits available to various post-secondary options based on competency showcased in each of their individual portfolios. One-year seniors will be considered if space is available in the program.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
COMMERCIAL AND ADVERTISING ART Code: 50.0402
An instructional program in the applied visual arts that prepares individuals to use artistic techniques to effectively communicate ideas and information to business and consumer audiences via illustrations and other forms of printed media. This program includes instruction in concept design, layout, paste-up, and techniques such as engraving, etching, silkscreen, lithography, offset, drawing and cartooning, painting, collage, and computer graphics.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Commercial Art 2019
Course Objectives

This program prepares the student for success as a:

COMMERCIAL ILLUSTRATOR
S.O.C. #27-1013
Draws or paints illustrations for use by various media to explain or adorn printed or spoken word: Studies layouts, sketches of proposed illustrations, and related materials to become familiar with assignment. Determines style, technique, and medium best suited to produce desired effects and conform with reproduction requirements or receives specific instructions regarding these variables. Formulates concept and renders illustration and detail from models, sketches, memory, and imagination. Discusses illustration at various stages of completion and makes changes, as necessary. May select type, draw lettering, layout material, or perform related duties. May be identified per specific style, technique, medium, subject material, or combination of variables. May draw or paint graphic material and lettering to be used for title, background, screen advertising, commercial logo, and other visual layouts for motion picture production and television programming and be designated Title Artist.

to make layout prints for supervisor or client. May develop negatives and prints, using negative and print developing equipment, tools and work aids to produce layout photographs for client or supervisor. May key information into computer equipment to create layouts for client or supervisor.

DIGITAL IMAGER
S.O.C. #43-9031
Designs art and copy layouts for material to be presented by visual communications media such as books, magazines, newspapers, television, and packaging: Studies illustrations and photographs to plan presentation of material, product, or service. Determines size and arrangement of illustrative material and copy, selects style and size of type, and arrange layout based upon available space, knowledge of layout principles, and esthetic design concepts. Draws sample of finished layout and presents sample to ART DIRECTOR for approval. Prepares notes and instructions for workers who assemble and prepare final layouts for printing. Reviews final layout and suggests improvements as needed. May prepare illustrations or rough sketches of material per instructions of client or supervisor. May prepare series of drawings to illustrate sequence and timing of story development for television production. May mark up, paste, and assemble final layouts to prepare layouts for printer. May specialize in a field, medium, or type of layout. May produce still and animated graphic formats for on-air and taped portions of television news broadcasts, using electronic video equipment. May photograph layouts, using camera, to make layout prints for supervisor or client. May develop negatives and prints, using negative and print developing equipment, tools, and work aids to produce layout photographs for client or supervisor. May key information into computer equipment to create layouts for client or supervisor.

GRAPHIC DESIGNER
S.O.C. #27-1024
Designs art and copy layouts for material to be presented by visual communications media such as books, magazines, newspapers, television, and packaging: Studies illustrations and photographs to plan presentation of material, product, or service. Determines size and arrangement of illustrative material and copy, selects style and size of type, and arrange layout based upon available space, knowledge of layout principles, and esthetic design concepts. Draws sample of finished layout and presents sample to ART DIRECTOR for approval. Prepares notes and instructions for workers who assemble and prepare final layouts for printing. Reviews final layout and suggests improvements as needed. May prepare illustrations or rough sketches of material per instructions of client or supervisor. May prepare series of drawings to illustrate sequence and timing of story development for television production. May mark up, paste, and assemble final layouts to prepare layouts for printer. May specialize in a field, medium, or type of layout. May produce still and animated graphic formats for on-air and taped portions of television news broadcasts, using electronic video equipment. May photograph layouts, using camera, to make layout prints for supervisor or client. May develop negatives and prints, using negative and print developing equipment, tools, and work aids to produce layout photographs for client or supervisor. May key information into computer equipment to create layouts for client or supervisor.
**Minimum Time Requirements**
The Commercial Art program will consist of a two-year sequence with a minimum of 720 instructional hours.

**EVALUATION CRITERIA**
**NOCTI Test # and Description with major topics**
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Commercial and Advertising Art  
Test Code: 7932  
Areas Covered on NOCTI exam:  
- Orientation  
- Safety  
- Hand Drawing and Illustration  
- Color Theory and Application  
- Digital Photography  
- Design, Layout and Production  
- Typography  
- Digital Photography  
- Professional Preparation

**CERTIFICATIONS OFFERED/REQUIRED**
**INDUSTRY AND OTHER**
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Commercial Art.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Adobe Certified Associate  
Adobe Certified Associate (ACA) certification is the perfect place to recognize and inspire creativity in students. It allows students to approach tasks and projects in new ways, working out solutions they could not have seen before; and helping you as a teacher become involved with student’s creative process on a new level.

ACA certification offers students a foundation for success by validating their digital skills, and offering the ability to assess student’s progress, engagement, and involvement.
COMMERCIAL ART

POST-SECONDARY REQUIREMENTS
A bachelor’s or an associate degree in graphic design is usually required for a job as a graphic designer. Creativity, communication, problem solving skills and familiarity with computer graphics and design software also are important. A bachelor’s degree is required for most entry-level and advanced graphic design positions, although some entry-level technical positions may only require an associate degree. Bachelor’s degree programs in fine arts or graphic design are offered at many colleges, universities, and private design schools. Most curriculums include studio art, principles of design, computerized design, commercial graphics production and printing techniques. In addition to design courses, a liberal arts education that includes courses in art history, psychology, sociology, foreign languages and cultural studies, marketing, and business are useful in helping designers work effectively.

Associate degrees and certificates in graphic design also are available from 2-year and 3-year professional schools. These programs usually focus on the technical aspects of graphic design and include few liberal arts courses. Graduates of 2-year programs normally qualify as assistants to graphic designers or for positions requiring technical skills only. Individuals who wish to pursue a career in graphic design – and who already possess a bachelor’s degree in another field – can complete a 2-year or 3-year program in graphic design to learn the technical requirements. Increasingly, employers expect new graphic designers to be familiar with computer graphics and design software. Graphic designers must keep up with new and updated software, on their own or through software training programs.

POST-SECONDARY OPPORTUNITIES
- Drexel University
- Hussian School of Art
- Indiana University of Pennsylvania
- Johnson & Wales University
- Kutztown University
- Montgomery County Community College
- Moore College of Art and Design
- Penn State University
- Pennsylvania College of Art and Design
- Pennsylvania College of Technology
- University of the Arts
- Temple University/Tyler School of Arts
- Full Sail University

Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>TECHNICAL</td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>Safety and Orientation</td>
<td>Typography</td>
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<td></td>
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<td></td>
<td>Hand Drawing and Illustration</td>
<td>Digital Photography Applications</td>
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<td>Color Theory and Applications</td>
<td>Full Color Layout and Design</td>
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<td>Digital Imaging Design, Layout and Production</td>
<td>Multi Page Layout and Design</td>
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<td>of Advertisements</td>
<td>Web Design and Applications</td>
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<td>Digital Photography</td>
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<td>ENGLISH</td>
<td>College Prep English I</td>
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<td>College Prep English III</td>
<td>College Prep English IV</td>
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<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
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<td>SCIENCE</td>
<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
<td></td>
</tr>
<tr>
<td>HUMANITIES</td>
<td>Civics</td>
<td>U.S. History</td>
<td>World History</td>
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<tr>
<td>OTHER</td>
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</tbody>
</table>
COMMERCIAL ART
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Bucks County Community College
• Northampton Community College

EASTERN CERTIFICATE OF COMPLETION

MAJORS:
• Graphic Design
• Photography
• Communication
• Web & Multimedia Design

CAREER OBJECTIVES:
• Graphic Design
• Illustration
• Digital Media

INDUSTRY CERTIFICATE
Adobe Certified Associate

TWO YEAR OPTIONS
Specialized Technical Training/College Education

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Moore College of Art & Design
• Pennsylvania College of Art and Design
• Hussian College

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Graphic Designer
• Illustrator
• Fashion Designer
• Photographer
• Animator

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

ENTER WORKFORCE AS

PRINT PRODUCTION
Tyler School of Art
Hussian College

GRAPHIC DESIGNER | ART DIRECTOR | MEDICAL ILLUSTRATOR
Iris Creative Group
Fastsigns

GRAPHIC ARTIST | PACKAGE DESIGNER | ILLUSTRATOR | WEB DESIGNER
Allebach Communications
Boggs Printing, Inc.

BACHELOR DEGREE OPTIONS
Two Year Options
• Specialized Technical Training/College Education

Four Year Options
• Advanced Degrees & What They Lead To

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Bucks County Community College
• Northampton Community College

EASTERN CERTIFICATE OF COMPLETION

MAJORS:
• Graphic Design
• Photography
• Communication
• Web & Multimedia Design

CAREER OBJECTIVES:
• Graphic Design
• Illustration
• Digital Media

INDUSTRY CERTIFICATE
Adobe Certified Associate

TWO YEAR OPTIONS
Specialized Technical Training/College Education

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Moore College of Art & Design
• Pennsylvania College of Art and Design
• Hussian College

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Graphic Designer
• Illustrator
• Fashion Designer
• Photographer
• Animator

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

ENTER WORKFORCE AS

PRINT PRODUCTION
Tyler School of Art
Hussian College

GRAPHIC DESIGNER | ART DIRECTOR | MEDICAL ILLUSTRATOR
Iris Creative Group
Fastsigns

GRAPHIC ARTIST | PACKAGE DESIGNER | ILLUSTRATOR | WEB DESIGNER
Allebach Communications
Boggs Printing, Inc.
COSMETOLOGY

PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to carry out all aspects of the cosmetology field. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Most instruction is conveyed in the laboratory through demonstrations and detailed instructions using hands on training aids and live work projects. Lecturing and classroom activities use textbooks, videos, and hands on training. Emphasis will be placed on passing the state board exam and working as a salon professional.

This curriculum has been designed in compliance with the rules of the Pennsylvania State Board of Cosmetology. The intent of the program is to provide the student with the required hours and skills necessary for the student to pass the Pennsylvania Cosmetology State Board Exam. This program will also provide students with a better understanding of the knowledge, skills and training needed to succeed in the Cosmetology profession. Emphasis is placed on safety and sanitation procedures, decontamination, professional ethics, and the basic skills associated with hairstyling, hair coloring, facial and scalp treatments, manicuring procedures, and hairstyling.

A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to develop the basic skills of network administration. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Instruction is conveyed in the theory room through demonstrations and detailed instructions utilizing hands on exercises, simulators and scenario projects. Lecturing and classroom activities, such as working in a team environment, include the use of textbooks, on-line curriculum and students doing research on various industry topics.

Pennsylvania CIP Code and Certification Information
COSMETOLOGY/COSMETOLOGIST, GENERAL Code: 12.0401
An instructional program that prepares individuals to apply technical knowledge and skills related to experiences in a variety of beauty treatments including the care and beautification of the hair, complexion and hands. Instruction includes training in giving shampoos, rinses and scalp treatments; hair styling, setting, cutting, dyeing, tinting and bleaching; permanent waving; facials; manicuring; and hand and arm massaging. Bacteriology, anatomy, hygiene, sanitation, salon management including record keeping and customer relations are also emphasized. Instruction is designed to qualify pupils for the licensing examination.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Cosmetology 2023
Course Objectives
This program prepares the student for success as a:

COSMETOLOGIST
S.O.C. #39-5012
Provides beauty services for customers: Analyzes hair to ascertain condition of hair. Applies bleach, dye, or tint, using applicator or brush, to color customer’s hair, first applying solution to portion of customer’s skin to determine if customer is allergic to solution. Shampoos hair and scalp with water, liquid soap, dry powder, or egg, and rinses hair with vinegar, water, lemon, or prepared rinses. Massages scalp and gives other hair and scalp-conditioning treatments for hygienic or remedial purposes. Styles hair by blowing, cutting, trimming, and tapering, using clippers, scissors, razors, and blow-wave gun. Suggests coiffure per physical features of patron and current styles or determines coiffure from instructions of patron. Applies water or waving solutions to hair and winds hair around rollers, or pin curls and finger-waves hair. Sets hair by blow-dry or natural-set, or presses hair with straightening comb. Suggests cosmetics for conditions, such as dry or oily skin. Applies lotions and creams to customer’s face and neck to soften skin and lubricate tissues. Performs other beauty services, such as massaging face or neck, shaping and coloring eyebrows or eyelashes, removing unwanted hair, applying solutions that straighten hair or retain curls or waves in hair, and waving or curling hair.

NAIL/SALON TECHNICIAN
S.O.C. #39-5092
Cleans, shapes, and polishes customers’ fingernails and toenails: Removes previously applied nail polish, using liquid remover and swabs. Shapes and smooths ends of nails, using scissors, files, and emery boards. Cleans customers’ nails in soapy water, using swabs, files, and orange sticks. Softens nail cuticles with water and oil, pushes back cuticles, using cuticle knife, and trims cuticles, using scissors or nippers. Whitens underside of nails with white paste or pencil. Polishes nails, using powdered polish and buffer, or applies clear or colored liquid polish onto nails with brush. May perform other beauty services such as giving facials, and shampooing, tinting, and curling hair.

MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
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<tr>
<td>39-5012</td>
<td>Cosmetologist</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
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<td>39-5092</td>
<td>Nail/Salon Technician</td>
<td>R2</td>
<td>4-6</td>
<td>M1</td>
<td>0-3</td>
<td>L4</td>
<td>4-6</td>
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</table>
Minimum Time Requirements
The Cosmetology program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:
Textbook: Milady Standard
Publisher: Cengage Learning

EVALUATION CRITERIA
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: Cosmetology/Cosmetologist
Test Code: 8295
Areas Covered on NOCTI exam:
- Bacteriology, Disinfection, and Sanitation
- Professional Business Practices and Law
- Histology/Physiology
- Trichology
- Chemistry
- Skin Care
- Electricity
- Shampoo and Conditioning Treatment
- Hair Shaping
- Hair Styling
- Chemical Texture Services
- Hair Coloring
- Nail Technology

CERTIFICATIONS OFFERED/REQUIRED
INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Cosmetology.
EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.
State Board of Cosmetology Exam-EASTERN staff will prepare students to sit for the PA State Board of Cosmetology Exam in the spring of their senior year.

POST-SECONDARY ALIGNMENT/
ARTICULATION/DUAL ENROLLMENT
- Empire Beauty School
- Lansdale School of Cosmetology
- Bucks County School of Beauty Culture

Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
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<th>Grade 11</th>
<th>Grade 12</th>
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<tbody>
<tr>
<td>TECHNICAL</td>
<td>College Prep</td>
<td>College Prep</td>
<td>Hair Coloring and Lightening</td>
<td>Facial/Massages</td>
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<td>English I</td>
<td>English II</td>
<td>Shaping Hair</td>
<td>Make-up</td>
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<td>Styling and Fitting Wigs and Hair Pieces</td>
<td>Chemical Relaxers and Soft Curl</td>
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<td>Permanent Waving</td>
<td>Services</td>
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<td>Shampooing</td>
<td>Thermal Straighten Hair</td>
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<td>Conditions Hair and Scalp</td>
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<td>Operating a Salon</td>
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<td>English II</td>
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<td>Chemistry</td>
<td>Physics</td>
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<td>HUMANITIES</td>
<td>Civics</td>
<td>U.S. History</td>
<td>World History</td>
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<td>OTHER</td>
<td>Foreign Language</td>
<td>Foreign Language</td>
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</tbody>
</table>
COSMETOLOGY
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

EASTERN CERTIFICATE OF COMPLETION

CERTIFICATIONS THAT ALIGN:
- Make-up Design
- The Beauty Institute/Schwarzkopf Professional
- Instructor Certification (500 additional hours)

CAREER OBJECTIVES:
- Cosmetologist

INDUSTRY CERTIFICATE
- PA State Board of Cosmetology Licensing Exam

ASSOCIATES DEGREE PROGRAMS THAT ALIGN:
- Montgomery County Community College

BACHELOR DEGREE PROGRAMS:
- DeSales University for Business Admin
- National Institute of Medical Aesthetics

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
- Esthetician
- Product Representative
- Celebrity Stylist
- Salon Owner

ENTER WORKFORCE AS

COSMETOLOGIST
- Hair Cuttery
- Salon Mode
- Salon on Main

COSMETOLOGY TEACHER | MAKE-UP ARTIST
- Empire Beauty School
- Gravity Hair Salon
- Salon 463

SALON MANAGER OR OWNER
- Le Papillon Hair Salon
- Hand and Stone
- Gary Charles Salon
CULINARY ARTS

PROGRAM DESCRIPTION
This two-year half-day program enables students to acquire a variety of skills including soup and sauce preparation, preparation of meat, fish and poultry entrees, baking, kitchen sanitation, purchasing and inventory controls. One-year seniors will be considered if space is available in the program. A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to carry out all culinary tasks as required by the Pennsylvania Department of Education (PDE) Program of Study (POS) for Institutional Food Worker. Students will be expected to demonstrate their knowledge and understanding of the underlying culinary and hospitality concepts. Most instruction is delivered in the kitchen laboratory through demonstrations and detailed instruction using hands on training and live work projects. Culinary theory is supported using textbooks, videos, on-line instructional programs and classroom activities.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
INSTITUTIONAL FOOD WORKERS Code: 12.0508
An instructional program that prepares students for employment related to institutional, commercial or self-owned food establishments or other food industry occupations. Instruction and specialized learning experiences include theory, laboratory and work experience related to planning, selecting, preparing and serving of quantity food and food products; nutritive values; use and care of commercial equipment; safety; and sanitation precautions. Instruction skills are provided to individuals desiring to become employed in all areas of the food service industry at entry level.

Instructor Certification: Vocational-Intern/Instructional 2600 or Family and Consumer Sciences 5600
Occupational Competency Area: Quantity Foods 2059

Course Objectives
This program prepares the student for success as a:

COOK APPRENTICE
S.O.C. #35-1011
Prepares, seasons, and cooks soups, meats, vegetables, desserts, and other foodstuffs for consumption in eating establishments: Reads menu to estimate food requirements and orders food from supplier or procures food from storage. Adjusts thermostat controls to regulate temperature of ovens, broilers, grills, roasters, and steam kettles. Measures and mixes ingredients per recipe, using variety of kitchen utensils and equipment, such as blenders, mixers, grinders, slicers, and tenderizers, to prepare soups, salads, gravies, desserts, sauces, and casseroles. Bakes, roasts, broils, and steams meats, fish, vegetables, and other foods. Adds seasoning to foods during mixing or cooking, per personal judgment and experience. Observes and tests foods being cooked by tasting, smelling, and piercing with fork to determine that it is cooked. Carves meats, portions food on serving plates, adds gravies and sauces, and garnishes servings to fill orders. May supervise other cooks and kitchen employees. May wash, peel, cut, and shred vegetables and fruits to prepare them for use. May butcher chickens, fish, and shellfish. May cut, trim, and bone meat prior to cooking. May bake bread, rolls, cakes, and pastry. May price items on menu. May be designated per meal cooked or shift worked as Cook, Dinner; Cook, Morning; or per food item prepared as Cook, Roast; or per method of cooking as Cook, Broiler. May substitute for and relieve or assist other cooks during emergencies or rush periods and be designated Cook.
Minimum Time Requirements

The Culinary Arts program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:

Textbook: Johnson and Wales Culinary Essentials
Publisher: McGraw Hill Education

Textbook: Study Guide: The Culinary Professional
Publisher: G-W Publishers

Online Textbook: KP: Knowledge to Practice
Online Textbook: ServSafe-Food Handlers Guide

EVALUATION CRITERIA

NOCTI Test # and Description with major topics

Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and /or Competent Level.

Test: Culinary Arts Level 2 Cook
Test Code: 4336

Areas Covered on NOCTI exam:

- Safety and Sanitation
- Recipes
- Knife Skills
- Large and Small Equipment
- Cold Food Preparation
- Fruits, Vegetables and Starches
- Bakery Products
- Stocks, Sauces, and Hot Soups
- Meats, Poultry, Fish and Seafood
- Breakfast Foods

MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-3021</td>
<td>Prep Cook</td>
<td>R3</td>
<td>7-8</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>35-1011</td>
<td>Chef</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
</tr>
<tr>
<td>35-1011</td>
<td>Cook Apprentice</td>
<td>R3</td>
<td>7-8</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
</tr>
</tbody>
</table>
- Dairy Products and Alternatives
- Receiving and Storage
- Nutritional Values
- Management and Employability Skills
- Customer Service

**CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER**

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Culinary Arts.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

**Potential Certifications earned at EASTERN:**

- SERVSAFE FOOD HANDLER CERTIFICATION
- SERVSAFE MANAGER
  ServSafe is a food and beverage safety training program administered by the National Restaurant Association. The course discusses food borne illnesses including information on specific food borne pathogens and biological toxins, such as shellfish poisoning, contamination, and food allergies. Preventions is also covered, with information regarding purchasing and receiving guidelines, food preparation, holding and serving guidelines, food safety management systems, sanitation guidelines for facilities and equipment, and integrated pest control, as well as food safety regulations and employee training. This is an OAC recommended certification.
- S/P2 CULINARY
  From fast food to fine dining, the food service industry is as diverse as the students who will become our future culinary leaders. This course prepares students for the hazards they will encounter in kitchens, dining areas, and other culinary environments.
- AMERICAN CULINARY FEDERATION (ACF) culinary certification. This is an OAC recommended certification.

**POST-SECONDARY OPPORTUNITIES**

- Penn College of Technology
- Culinary Institute of America
- Johnson and Wales University
- Bucks County Community College
- Montgomery County Community College
- The Restaurant School
- Indiana University of Pennsylvania
- Drexel University
- Temple University
- Philadelphia Community College

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**Recommended Scope and Sequence - SECONDARY SCHOOL**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
<td></td>
<td><strong>Kitchen and Personal Cleanliness and Hygiene</strong></td>
<td><strong>Food Service Production</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Food Preparation</strong></td>
<td><strong>Costing Out Menus</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Food Inventory</strong></td>
<td><strong>Nutrition</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Prep. and Use of Food</strong></td>
<td><strong>Hospitality and Customer Service</strong></td>
</tr>
<tr>
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<td></td>
<td></td>
<td><strong>Service Tools &amp; Equipment</strong></td>
<td><strong>Supervisory Skills</strong></td>
</tr>
<tr>
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<td></td>
<td><strong>Commercial Baking</strong></td>
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</tr>
<tr>
<td><strong>ENGLISH</strong></td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
</tr>
<tr>
<td><strong>MATH</strong></td>
<td>Algebra I</td>
<td>Geometry</td>
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<td><strong>SCIENCE</strong></td>
<td>Biology</td>
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<td>Civics</td>
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<td><strong>OTHER</strong></td>
<td>Foreign Language</td>
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</table>
CULINARY ARTS / EASTERN

CULINARY ARTS Career Pathways

START AT EASTERN
Technical Academic Education

TWO YEAR OPTIONS
Specialized Technical Training/College Education

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
- Culinary Institute of Montgomery County Community College
- Bucks County Community College

BACHELOR DEGREE PROGRAMS:
- Johnson and Wales Univ
- Drexel University
- Penn State University
- Paul Smith College
- Temple University
- Widener Univ

With experience & education, can lead to jobs such as:
- Line Cook
- Sous Chef
- Kitchen Manager
- Baker

ENTRY LEVEL RESTAURANT EMPLOYEE | PREP COOK
Zoe’s Kitchen
Whole Foods
Riveria Pizza

LINE COOK | SOUS CHEF | KITCHEN MANAGER
Rydal Long Term Care
Anthony’s Coal Fired Pizza

CHEF | FOOD BEVERAGE MANAGER
Weinrich Bakery
Lochel’s Bakery
Wesley Enhanced Living
This course will develop various skills to use in the real-world business field. The intent of the program is to prepare the student with necessary competencies with various office software, communication and soft skills to thrive in a business environment. This course includes instruction in Microsoft Office suite and other communication software. Students will build on and understand various office procedures, manage multi-tasking, customer service and all other skills needed to run and manage in a business environment successfully. Students will be expected to utilize appropriate skills and techniques to organize, prioritize, and complete tasks and produce associated documents in a professional environment. Emphasis will be placed on the development of the necessary skills and knowledge required to be successful in post-secondary education in a business major. The work performed in this program is considered college level. This is a dual enrollment course with Montgomery County Community College.

Instructor Certification: Business, Computer and Information Technology 1603
Occupational Competency Area: NA
Course Objectives
This program prepares the student for success as a:

**EXECUTIVE ADMINISTRATIVE ASSISTANT**
S.O.C. #43-6011
Aids executive in staff capacity by coordinating office services, such as personnel, budget preparation and control, housekeeping, records control, and special management studies. Studies management methods to improve workflow, simplify reporting procedures, or implement cost reductions. Analyzes unit operating practices, such as recordkeeping systems, forms control, office layout, suggestion systems, personnel and budgetary requirements, and performance standards to create new systems or revise established procedures. Analyzes jobs to delimit position responsibilities for use in wage and salary adjustments, promotions, and evaluation of workflow. Studies methods of improving work measurements or performance standards. Coordinates collection and preparation of operating reports, such as time-and-attendance records, terminations, new hires, transfers, budget expenditures, and statistical records of performance data. Prepares reports including conclusions and recommendations for solution of administrative problems. Issues and interprets operating policies. Reviews and answers correspondence. May assist in preparation of budget needs and annual reports of organization. May interview job applicants, conduct orientation of new employees, and plan training programs. May direct services, such as maintenance, repair, supplies, mail, and files. May compile, store, and retrieve management data, using computer.

**CUSTOMER SERVICE REPRESENTATIVE**
S.O.C. #43-4051
Receives cash from customers or employees in payment for goods or services and records amounts received: Re-computes or computes bill, itemized lists, and tickets showing amount due, using adding machine or cash register. Makes change, cashes checks, and issues receipts or tickets to customers. Records amounts received and prepares reports of transactions. Reads and records totals shown on cash register tape and verifies against cash on hand. May be required to know value and features of items for which money is received. May give cash refunds or issue credit memorandums to customers for returned merchandise. May operate ticket-dispensing machine. May operate cash register with peripheral electronic data processing equipment by passing individual price coded items across electronic scanner to record price, compile printed list, and display cost of customer purchase, tax, and rebates on monitor screen.

**ADMINISTRATIVE ASSISTANT**
S.O.C. #43-6014
Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail: Reads and routes incoming mail. Locates and attaches appropriate file to correspondence to be answered by employer. Takes dictation in shorthand or by machine and transcribes notes. Composes and types routine correspondence. Files correspondence and other records. Answers telephone and gives information to callers or routes call to appropriate official and places outgoing calls. Schedules appointments for employer. Greets visitors, ascertains nature of business, and conducts visitors to employer or appropriate person. May not take dictation. May arrange travel schedule and reservations. May compile and type statistical reports. May oversee clerical workers. May keep personnel records. May record minutes of staff meetings. May make copies of correspondence or other printed matter, using copying or duplicating machine. May prepare outgoing mail, using postage-metering machine. May prepare notes, correspondence, and reports, using word processor or computer terminal.
Minimum Time Requirements
The Business and Technology Professional program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:
Textbook: *Procedures and Theory for Administrative Professionals*
Publisher: South-Western Cengage Learning
Textbook: *Fundamentals of Accounting, Course 1*
Publisher: South-Western Cengage Learning
Textbook: *Computer Concepts and Applications with MS Office*
Publisher: Paradigm Education Solutions

### MATH, LANGUAGE AND REASONING LEVELS

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<tbody>
<tr>
<td>43-6011</td>
<td>Executive Administrative Assistant</td>
<td>R5</td>
<td>COL 1-2</td>
<td>M3</td>
<td>7-8</td>
<td>L5</td>
<td>COL 1-2</td>
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<tr>
<td>43-6014</td>
<td>Administrative Assistant</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
<td>9-12</td>
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<tr>
<td>43-4051</td>
<td>Customer Service Representative</td>
<td>R4</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L2</td>
<td>4-6</td>
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<td>Orientation Computers and Internet</td>
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<td>Document Processing Software</td>
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<td>Business Writing and Communication</td>
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<td></td>
<td>Spreadsheet Software</td>
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<td>Office Procedures and Customer Service</td>
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### EVALUATION CRITERIA

**NOCTI Test # and Description with major topics**

Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Administrative Assisting
Test Code: 4101

Areas Covered on NOCTI exam:
- Computer Applications (Documents, Spreadsheets, Databases and Presentations)
- Working in an Office Environment
- Office Procedures and Customer Service Skills
- Accounting and Computational Skills
- Business Law and Ethics

### CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Business and Technology Professional.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

**Microsoft Office Specialist Certification-Word**
This is an OAC recommended certification.

**Dual Enrollment Opportunity**
Montgomery Community College offers up to nine transferable credits over two years to students successfully completing their criteria.

**Post-secondary Opportunities**
- Montgomery County Community College
- Lehigh Carbon Community College
- Northampton Community College
- Delaware Community College
BETX AUDI TECHNOLOQY PROFESSONAL
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

EASTERN CERTIFICATE OF COMPLETION

INDUSTRY CERTIFICATE
• Microsoft Office Specialist - Word

CAREER OBJECTIVES:
• Administrative/Executive Assistant
• Customer Service Rep

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Montgomery County Community College
• Harcum • Manor
• Community College of Philadelphia

TWO YEAR OPTIONS
Specialized Technical Training/College Education

MAJOR:
• Office Administration
• Business Management
• Accounting
• Business (General)

ENTER WORKFORCE AS
ENTRY LEVEL OFFICE POSITION
- FILING, ANSWERING PHONES

Military
Penn Medicine
Quality Progressions

MID-LEVEL OFFICE POSITION
Eastern Center for Arts and Technology
Chapman Auto Group, Horsham

MANAGEMENT EXECUTIVE LEVEL POSITION

TruMark Financial
PA State Rep. Tom Murt’s Office Corporate Call Center

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Clarion University
• Temple University
• Penn State Abington

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Business Administration
• Business Management
• Accountant
• Financial Analyst

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Clarion University
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WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Business Administration
• Business Management
• Accountant
• Financial Analyst
PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to develop the basic skills of network administration and cybersecurity. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Instruction is conveyed in the computer lab through demonstrations and detailed instructions utilizing hands on exercises, simulators, and scenario projects. Lecturing and classroom activities, such as working in a team environment, include the use of textbooks, on-line curriculum and students doing research on various industry topics. This course will develop skills to understand the different network operating systems and how to configure and administer each. Students learning experiences will include: the design, evaluate, install, troubleshoot, and maintain computer hardware components, operating systems, and networks. Emphasis will be placed on the development of the necessary skills and knowledge required to be successfully in post-secondary education with a major in the computer field.

This is a Dual Enrollment program with Montgomery County Community College.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
COMPUTER SYSTEMS NETWORKING AND TELECOMMUNICATIONS Code: 11.0901
An instructional program that focuses on the design, implementation and management of linked systems of computers, peripherals and associated software and prepares individuals with the technical skills required to support networks and network users. This program includes instruction in networks technologies and standards: system design, architecture, operating systems, security, communications protocols, client support, messaging services, network management, troubleshooting and server optimization. Those completing the program may be employed as a network administrator, network specialist, network technician, webmaster, client services analyst (end user) or network operator.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Network Systems Technology 2560

Course Objectives
This program prepares the student for success as a:

NETWORK ADMINISTRATOR
S.O.C. #15-1142
Install, configure, and support an organization’s local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures.

COMPUTER NETWORK SUPPORT SPECIALIST
S.O.C. #15-1231
Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.
**MATH, LANGUAGE AND REASONING LEVELS**

**EVALUATION CRITERIA**
**NOCTI Test # and Description with major topics**

Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Computer Systems Networking PA
Test Code: 8148

Areas Covered on NOCTI exam:
- Personal and Environmental Safety
- Computer Hardware
- Troubleshooting, Repair and Maintenance
- Operating Systems and Software
- Network Technologies
- Network Media and Topologies
- Network Devices
- Network Management
- Network Tools and Troubleshooting
- Security Fundamentals

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**Recommended Scope and Sequence - SECONDARY SCHOOL**

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<td></td>
<td>Updating and Troubleshooting Working with TCP/IP Networking Basics Administering and Configuring a Cisco Routers and Switches Updating and Troubleshooting Hardware</td>
<td>Applications and Introduction Microsoft VISTA Administering and Configuring Linux Securing the Network/Recover, Security, Anti-Virus Administering and Configuring Microsoft Server</td>
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<tr>
<td>ENGLISH</td>
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</tbody>
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Prerequisites: Strong math background (Algebra II completed or scheduled during the first year)
Minimum Time Requirements
The Networking and Cybersecurity program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources
Materials utilized are online courses.

CERTIFICATIONS OFFERED/REQUIRED
INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Networking and Cybersecurity.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Program Accreditation
This course is part of the following industry related academies:
• Cisco Networking Academy
• Microsoft IT Academy

Each academy which we are associated with is committed to education because they recognize that with an early introduction to technology, students will have a distinct advantage as they advance in school and enter the workforce. To ensure high quality, technological instruction, industry courseware and assessments, if available, are utilized.

DUAL CREDITS/STATEWIDE ARTICULATIONS
Dual Enrollment/Dual Credit
EASTERN is a Dual Enrollment partner with Montgomery County Community College (MCCC) in Networking and Cybersecurity. This affords the students opportunity to receive both high school and transferable, graded, college credits for the curriculum they successfully complete in the program. Dual Enrollment students may also take additional courses through MCCC either on campus or online.

Dual Enrollment is when high school students take college classes. The students are enrolled in high school and college at the same time. Dual Credit is a subset of dual enrollment. It is when students take college classes at their high school and receive both high school and college credit for the college course.

Students in Networking and Cybersecurity may enroll in one course each semester at EASTERN. Each course is 3 credits. These credits are awarded after the successful completion of each course. The maximum number of credits awarded during the program is 12 transferable college credits from EASTERN. After High School Graduation students may continue their education at MCCC. A dual enrollment student you can automatically register for classes at any time. Students may also transfer credits to another four-year college or university. MCCC courses have a very high transfer rate.

POST-SECONDARY OPPORTUNITIES
Montgomery County Community College
• Dual Enrollment - up to 12 transferable credits
• Additional credits may be taken at the college while enrolled in Networking and Cybersecurity

Penn State University - Abington
• Acceptance into the Information Sciences and Technology program and admission fee waived if requirements are met

Penn College of Technology
• Advanced Placement - competency assessment evaluation made by the teacher to PCT and PCT assign credit value

DeVry University
• Earn up to eight credits

CERTIFICATIONS
Security +
Security+ is a global certification that validates the baseline skills you need to perform core security functions and pursue an IT security career. This is an OAC required certification.

Microsoft Server +
Server+ certified candidates can work in any environment because it is the only vendor-neutral certification covering the major server platforms. It is the only industry certification that covers the latest server technologies including virtualization, security and network-attached storage. This is an OAC recommended certification.

POST-SECONDARY OPPORTUNITIES
Penn State University
West Chester University
Widener University
Temple University
Indiana University of Pennsylvania
Drexel University
East Stroudsburg University
New York Institute of Technology
Diploma from participating high school

Certificate of Completion

Career Objectives:
• Network Administration
• Systems Administration

Diploma from participating high school

Associate degree programs that align:
• Montgomery County Community College

Two year options
Specialized Technical Training/College Education

Eastern certificate of completion

Bachelor degree programs that align:
• Temple University
• Penn State University
• Penn College of Technology

Four year options
Advanced Degrees & What They Lead To

Industry certificate
• TestOut Microsoft Server 2016

Start at Eastern
Technical Academic Education

Start at Eastern
Technical Academic Education

Major:
• Computer Networking: Network Administration
• Computer Networking: Cybersecurity
• Information Technology

With experience & Education, can lead to jobs such as:
• Computer Network Administrator
• Computer Information Specialist
• Technology Support
• Cybersecurity Specialist

Enter workforce as
Technology Intern
Military Internship - Eastern

Technology support
Comcast
Hatboro-Horsham School District

Computer Network Administration | Cybersecurity
ESPN
Innovative IT Concepts
PROTECTIVE SERVICES

PROGRAM DESCRIPTION
An instructional program that prepares individuals to apply technical knowledge and skills required to perform entry-level duties in law enforcement, firefighting, EMT and other safety services. This program stresses the techniques, methods and procedures peculiar to the areas of criminal justice, fire protection, ems especially in emergency and disaster situations. Physical development, self-confidence and leadership skills are emphasized due to the nature of the specific occupation(s). In addition to the application of mathematics, communication, science and physics, students receive training in social and psychological skills, map reading, vehicle and equipment operations, the judicial system, and pre-hospital emergency medical care.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
HOMELAND SECURITY, LAW ENFORCEMENT, FIREFIGHTING AND RELATED PROTECTIVE SERVICES, OTHER Code: 43.9999
An instructional program that prepares individuals to apply technical knowledge and skills required to perform entry-level duties in law enforcement, firefighting, EMT and other safety services. This program stresses the techniques, methods and procedures peculiar to the areas of criminal justice and fire protection especially in emergency and disaster situations. Physical development and self-confidence skills are emphasized due to the nature of the specific occupation(s). In addition to the application of mathematics, communication, science and physics, students receive training in social and psychological skills, map reading, vehicle and equipment operations, the judicial system, pre-hospital emergency medical care and appropriate emergency assessment, treatment and communication.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Protective Services Occupations 2122

Course Objectives
This program prepares the student for success as a:

POLICE
S.O.C. #33-3051
Patrol duties assigned to foot, motorcycle, patrol car, or mounted, to enforce traffic, prevent crime or disturbance of peace, and arrest violators:
Familiarizes self with neighborhoods, and with persons living in the area. Notes suspicious persons and establishments and reports to superior officer. Reports hazards. Disperses unruly crowds at public gatherings. Renders medical care at crashes and investigates causes and results of crashes. Directs and reroutes traffic around fire or other disruption. Inspects public establishments requiring licenses to ensure compliance with rules and regulations. Warns or arrests persons violating animal ordinances. Issues tickets to traffic violators. Writes and files daily activity report with superior officer. May notify public works department of location of abandoned vehicles to tow away. Investigate crimes, process crime scenes, terrorism and homeland security issues.
FIRE FIGHTER
S.O.C. #33-2011
Controls and extinguishes fires, protects life and property, and maintains equipment as volunteer or employee of city, township, or industrial plant: Responds to fire alarms and other emergency calls. Selects hose nozzle, depending on type of fire, and directs stream of water or chemicals onto fire. Positions and climbs ladders to gain access to upper levels of buildings or to assist individuals from burning structures. Creates openings in buildings for ventilation or entrance, using ax, chisel, crowbar, electric saw, core cutter, and other power equipment. Protects property from water and smoke by use of waterproof salvage covers, smoke ejectors, and deodorants. Administers emergency medical care and artificial respiration, CPR to injured persons and those overcome by fire and smoke. Communicates with superior during fire, using portable two-way radio. Inspects buildings for fire hazards and compliance with fire prevention ordinances. Performs assigned duties in maintaining apparatus, quarters, buildings, equipment, grounds, and hydrants. Participates in drills, demonstrations, and courses in hydraulics, pump operation and maintenance, and firefighting techniques. May fill fire extinguishers in institutions or industrial plants. May issue forms to building owners, listing fire regulation violations to be corrected. May drive and operate firefighting vehicles and equipment. Understands fire fighter search and rescue.

SECURITY
S.O.C. #33-9032
Investigates source of alarm and trouble signals on subscribers’ premises, as recorded in central station of electrical protective signaling system: Drives radio-equipped car to subscriber’s establishment, and locates source of alarm. Investigates disturbances, such as unlawful intrusion, fires, and property damage. Apprehends unauthorized persons found on property, using armed force if necessary, and releases them to custody of authorities. Contacts supervisor by radio or telephone to report irregularities and obtain further instructions. Adjusts and repairs subscriber’s signaling equipment to restore service, using hand tools. Coordinates activities with police and fire departments during alarms. Writes investigation and automobile usage reports.

EMERGENCY MEDICAL TECHNICIANS
S.O.C. #29-2042
Administers first-aid treatment to and transports sick or injured persons to medical facility, working as member of emergency medical team: Responds to instructions from emergency medical dispatcher and drives specially equipped emergency vehicle to specified location. Monitors communication equipment to maintain contact with dispatcher. Removes or assists in removal of victims from scene of accident or catastrophe. Determines nature and extent of illness or injury, or magnitude of catastrophe, to establish first aid procedures to be followed or need for additional assistance, basing decisions on statements of persons involved, examination of victim or victims, and knowledge of emergency medical practice. Administers prescribed first-aid treatment at site of emergency, or in specially equipped vehicle, performing such activities as application of splints, administration of oxygen or intravenous injections, treatment of minor wounds or abrasions, or administration of artificial resuscitation. Communicates with professional medical personnel at emergency treatment facility to obtain instructions regarding further treatment and to arrange for reception of victims at treatment facility. Assists in removal of victims from vehicle and transfer of victims to treatment center. Assists treatment center admitting personnel to obtain and record information related to victims’ vital statistics and circumstances of emergency. Maintains vehicles and medical and communication equipment and replenishes first-aid equipment and supplies. May assist in controlling crowds, protecting valuables, or performing other duties at scene of catastrophe. May assist professional medical personnel in emergency treatment administered at medical facility.
### MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
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<td>Police</td>
<td>R4</td>
<td>9-12</td>
<td>M2</td>
<td>4-6</td>
<td>L3</td>
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<td>33-9032</td>
<td>Security</td>
<td>R3</td>
<td>7-8</td>
<td>M1</td>
<td>0-3</td>
<td>L2</td>
<td>4-6</td>
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<td>33-2011</td>
<td>Fire Fighter</td>
<td>R4</td>
<td>9-12</td>
<td>M2</td>
<td>4-6</td>
<td>L3</td>
<td>7-8</td>
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<td>29-2042</td>
<td>Emergency Medical Technician</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>6-9</td>
<td>L4</td>
<td>9-12</td>
</tr>
</tbody>
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**Prerequisites:** The student must undergo a State Police check to enroll in the program and work in this field.

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### Recommended Scope and Sequence - SECONDARY SCHOOL

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<thead>
<tr>
<th>Subject</th>
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<th>Grade 11</th>
<th>Grade 12</th>
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<td>Law Enforcement Patrol</td>
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<td></td>
<td>Hazardous Materials</td>
<td>Law Enforcement Arrest Procedures</td>
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<td></td>
<td>Emergency Telecommunications</td>
<td>Emergency and Law Enforcement Search</td>
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<tr>
<td></td>
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<td></td>
<td>Basic First Aid</td>
<td>Crime Scene Investigation</td>
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<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
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<td>MATH</td>
<td>Algebra I</td>
<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
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<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
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<td>HUMANITIES</td>
<td>Civics</td>
<td>U.S. History</td>
<td>World History</td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>Foreign Language</td>
<td>Foreign Language</td>
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</tbody>
</table>
Minimum Time Requirements
The Protective Services program will consist of a two-year sequence with a minimum of 720 instructional hours

Educational Resources:
Textbook: Essentials of Fire Fighting
Publisher: International Fire Services Training Association
Textbook: Criminal Justice Today
Publisher: Pearson
Textbook: First Responder
Publisher: James and Bartlett
Textbook: Hazmat Materials Awareness and Operations, Publisher: James and Bartlett

EVALUATION CRITERIA
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: Homeland Security
Test Code: 8290
Areas Covered on NOCTI exam:
- Safety Procedures
- Criminal Justice System
- Probation, Parole, Juvenile Justice System, and Corrections
- Communication Techniques
- Incident Management
- Law Enforcement
- Patrol Duties
- Emergency Medical Services (EMS)
- Firefighting
- Private Security Management
- Current Trends in Criminal Justice and Homeland Security

CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Business and Technology Professional.
EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

POTENTIAL CERTIFICATIONS EARNED AT EASTERN:
- Hazardous Materials Awareness
  Participants will learn how to recognize a hazardous materials release and the risks involved. They will also learn how to identify the released material; how to use available resources, including the Emergency Response Guidebook; and how to notify the proper authorities in the event of a hazardous material emergency.
- Adult CPR
  Learn how to respond to cardiac and breathing emergencies in adults, including the use of automated external defibrillators (AED).
- Standard First Aid
  Standard – In this First-Aid Certification Course students will properly learn First-Aid to care for wounds, cuts & scrapes as well as, drug overdoses, electroshock’s, strokes, heart attacks, poisoning and more.
- National Incident Management Systems Levels 100, 200, 700, and 800
  The National Incident Management System (NIMS) is a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work together seamlessly and manage incidents involving all threats and hazards—regardless of cause, size, location, or complexity—to reduce loss of life, property and harm to the environment. The NIMS is the essential foundation to the National Preparedness System (NPS) and provides the template for the management of incidents and operations in support of all five National Planning Frameworks.

POST-SECONDARY OPPORTUNITIES
- Montgomery County Community College
- Bucks County Community College
- Kutztown University
- Penn State University
- United States Army
- United States Navy
- United States Air Force
- United States Marine Corps
- Abington Police Department
- Cheltenham Police Department
PROTECTIVE SERVICES
Career Pathways

START AT EASTERN
Technical Academic Education

TWO YEAR OPTIONS
Specialized Technical Training/College Education

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

CERTIFICATE/LICENSEURE PROGRAMS THAT ALIGN:
- Police/Law Enforcement Academy
- Fire Academy
- Emergency Medical Technician / Paramedic

EASTERN CERTIFICATE OF COMPLETION

CAREER OBJECTIVES:
- Police
- Security
- Firefighter
- Emergency Medical Services

INDUSTRY CERTIFICATE
- Hazmat Awareness
- CPR
- National Incident Management
- First Aid/First Responder

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
- Fire Science: Community Colleges, NJ, PA, DE, NY
- Criminal Justice: Criminology Community Colleges, NJ, PA, DE, NY

BACHELOR DEGREE PROGRAMS
- John Jay College of Criminal Justice, UPenn, Sam Houston, Strayer, Alvernia Univ, Bloomsburg Univ, Univ of Florida, Colorado Tech Univ

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
- Law Enforcement Officer
- Homeland Security Officer
- Defense Intelligence Rep
- US Coast Guard
- Emergency Management Personnel

ENTER WORKFORCE AS
ENTRY-LEVEL DISPATCHER | SECURITY GUARD | LOSS PREVENTION SPECIALIST
- County 911 Operator
- Willow Grove Fire Company

POLICE OFFICER | FIREFIGHTER | EMT | PARAMEDIC
- Second Alarmers Rescue Squad
- Upper Moreland Police Department

POLICE | FBI | LAW ENFORCEMENT
- Philadelphia Police Department
- Cheltenham Fire Department
CONSTRUCTION TECHNOLOGY

PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instructional and hands-on experience needed to carry out all tasks required of an entry level employee in the construction field. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Instruction is conveyed equally in the laboratory, through demonstrations and detailed instructions using hands on training aids and live work projects, as well as through theory and lectures.

This course will develop skills in the ability to:

- Write clear, concise, legible and accurate technical reports
- Communicate orally in the language of the construction industry to customers, co-workers and supervisors
- Perform basic manipulative skills of the trade
- Interpret plans, drawings, codes and specifications, lines, symbols and abbreviations on working drawings or blueprints
- Analyze specifications and contract drawings
- Make accurate labor and material estimations for a building project
- Lay out and erect a platform
- Describe various types of materials and methods available to the construction trade
- Describe business functions and principles
- Describe the complexity of the building construction industry
- Describe the complex interrelationships among numerous trades and professions within the industry
- Stay current with any new technology or codes related to the building/construction industries

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
CARPENTRY/CARPENTER Code: 46.0201
An instructional program that prepares individuals to apply technical knowledge and skills to lay out, fabricate, erect, install and repair structures and fixtures using hand and power tools. This program includes instruction in common systems of framing, construction materials, estimating, blueprint reading and finish carpentry techniques.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Carpentry 2017

Course Objectives
This program prepares the student for success as a:

CARPENTRY PRE-APPRENTICE
S.O.C. #47-3012
Constructs, erects, installs, and repairs structures and fixtures of wood, plywood, and wallboard, using carpenter’s hand tools and power tools, and conforming to local building codes: Studies blueprints, sketches, or building plans for information pertaining to type of material required, such as lumber or fiberboard, and dimensions of structure or fixture to be fabricated. Selects specified type of lumber or other materials. Prepares layout, using rule, framing square, and calipers. Marks cutting and assembly lines on materials, using pencil, chalk, and marking gauge. Shapes materials to prescribed measurements, using saws, chisels, and planes. Assembles cut
and shaped materials and fastens them together with nails, dowel pins, or glue. Verifies trueness of structure with plumb bob and carpenter’s level. Erects framework for structures and lays subflooring. Builds stairs and lays out and installs partitions and cabinet work. Covers subfloor with building paper to keep out moisture and lays hardwood, parquet, and wood-strip-block floors by nailing floors to subfloor or cementing them to mastic or asphalt base. Applies shock-absorbing, sound-deadening, and decorative paneling to ceilings and walls. Fits and installs prefabricated window frames, doors, door frames, weather stripping, interior and exterior trim, and finish hardware, such as locks, letter drops, and kick plates. Constructs forms and chutes for pouring concrete. Erects scaffolding and ladders for assembling structures above ground level. May weld metal parts to steel structural members. When specializing in a particular phase of carpentry, is designated per specialty as Combination-Window Installer (construction); Lay-Out Carpenter (construction). When specializing in finish carpentry, such as installing interior and exterior trim, building stairs, and laying hardwood floors, is designated Finish Carpenter (construction). When erecting frame buildings and performing general carpentry work in residential construction, is designated House Carpenter (construction). May remove and replace sections of structures prior to and after installation of insulating materials and be designated Building-Insulating Carpenter (construction; retail trade).

**EXTERIOR REMODELING AND INSTALLATION**

**S.O.C. #47-2141**

Repairs and remolds houses and small buildings, per blueprints or oral instructions: Measures distances and marks reference points on existing structure to lay out work. Removes defective members, existing siding, sheathing, and trim, using pinch bar, portable power saw, hammer, and another carpenter’s hand tools. Cuts lumber to size and shape, using hand or portable power saw. Nails and screws new framework, sheathing, and trim in place. Fills cracks and other defects in plaster or plasterboard with patching plaster, using trowel. Sands plaster patch after drying to match existing surface. Paints interior and exterior surfaces to specified color and texture. Replaces or installs new electrical fixtures, plumbing hardware, and brickwork, using pliers, screwdrivers, wrenches, and trowel.

**ROOFING AND SIDING HELPER**

**S.O.C. #47-3016**

Applies siding and installs prefabricated doors and windows to exterior wall panels of prefabricated and modular homes, following work orders and using hand tools: Lays out siding on sheathing, and cuts siding to fit, using square and hand or portable power saw. Fastens siding to sheathing using hammer, nails, and power tacker. Drills vent holes in wall panels, using power drill, and inserts vents. Fastens tarpaper weather stripping around perimeter of door and window openings, using power tacker. Positions and aligns windows and doors in openings, using tape measure. Fastens doors and windows to wall panel studs, using hammer and nails. Moves completed panels to storage area, using electric hoist. May install precut insulation between wall studs.

### MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
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<th>Grade Level</th>
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<td>Pre-Apprentice</td>
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<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<td>Exterior Remodeling and Installation</td>
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<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
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<td>47-3016</td>
<td>Roofing and Siding Helper</td>
<td>R3</td>
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<td>M1</td>
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</table>
## Minimum Time Requirements
The Construction Technology program will consist of a two-year sequence with a minimum of 720 instructional hours.

### Educational Resources:
- Textbook: *Carpentry*
- Publisher: Thomson-Delmar Learning

## EVALUATION CRITERIA
### NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

- **Test:** Carpentry
- **Test Code:** 4115

Areas Covered on NOCTI exam:
- Safety
- Tools and Accessories
- Blueprint Reading and Estimation Skills
- Foundations, Forms and Concrete
- Rough Framing
- Exterior Finish
- Interior Systems Installation
- Interior Finish
- Carpentry Related Mathematics

## EASTERN Grading Policy
- **Work Ethic:** 34% (Daily Grade, responsibility, safety)
- **Theoretical:** 33% (Tests, quizzes, homework)
- **Application:** 33% (Projects, labs, hands on)

## CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Construction Technology.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Potential Certifications earned at EASTERN:
- **OSHA 10**
  This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction safety and health hazards which a worker may encounter at a construction site. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards. This is and OAC required certification.

## POST-SECONDARY OPPORTUNITIES
- Thaddeus Stevens College
- Penn College of Technology
- Bucks County Community College
- Montgomery County Community College
- LaSalle University
- Universal Technical Institute
- ABC Apprenticeship Training Program
- Carpenter’s Apprenticeship School
- Penn College of Technology
- Montgomery County Community College
- Carpenters Union

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<th>Grade 11</th>
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<tr>
<td><strong>TECHNICAL</strong></td>
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<td>Planning Jobs</td>
<td>Doors and Windows</td>
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<td>Rough Framing</td>
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CONSTRUCTION TECHNOLOGY / EASTERN /

CONSTRUCTION TECHNOLOGY
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

EASTERN CERTIFICATE OF COMPLETION/PRE-APPRENTICESHIP CREDIT

INDUSTRY CERTIFICATE
• S/P2 – Construction
• Occupational Safety & Health Administration

CAREER OBJECTIVES:
• Roofing and Siding Helper
• Carpenter Pre-Apprentice

APPRENTICESHIP:
• Associated Builders and Contractors, Inc.
• Carpenters Apprentice School of Philadelphia & Vicinity

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Thaddeus Stevens College of Technology
• Penn College of Technology

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Penn College of Technology

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Architect
• General Contractor
• Teacher
• Surveyor
• Construction Manager

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

TWO YEAR OPTIONS
Specialized Technical Training/College Education

ENTER WORKFORCE AS

CONSTRUCTION LABORER
CONSTRUCTION APPRENTICE
ENTRY-LEVEL CARPENTER

ASSISTANT PROJECT MANAGER
CONSTRUCTION SAFETY MANAGER
CARPENTER

PROJECT MANAGER
ARCHITECT
GENERAL CONTRACTOR

William A. Geppert, Inc.
AH Adams & Company

Bades Building & Contractors
FH Poftarl Building Construction

Thornton Carpentry Service
PMD Construction
Jacquelin Construction
ELECTRICAL TECHNOLOGY

PROGRAM DESCRIPTION
This course will prepare individuals to apply technical knowledge and skills necessary to install, operate, maintain and repair electrically energized residential, commercial and industrial power systems, motor controls and electrical distribution panels. Instruction emphasizes practical application of mathematics, science, circuit diagrams and use of electrical codes and includes blueprint reading, sketching and other subjects essential for employment in the electrical occupations.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Electrical Occupations 2088

Course Objectives
This program prepares the student for success as a:

RETAIL COUNTER CLERK
S.O.C. #41-2021
Sells electrical, and other parts and equipment in repair facility or parts store: Ascertains make, year, and type of part needed, inspects worn, damaged, or defective part to determine replacement required, or advises customer of part needed per description of malfunction. Discusses use and features of various parts, based on knowledge of machine or equipment. Reads catalog, or computer for replacement part stock number and price. Advises customer on substitution or modification of part when replacement is not available. Examines returned part to determine if defective, and exchanges part or refunds money. Fills customer orders from stock. Marks and stores parts in stockroom per prearranged system. Receives and fills telephone orders for parts.
ELECTRICIAN HELPER  
S.O.C. #47-3013  
Assists electrician to install and repair electrical wiring, fixtures, and equipment, performing any combination of following tasks: Gathers tools and supplies to be used at work site, per instructions. Measures, cuts, and bends wire and conduit, using ruler and hand tools. Drills holes for wiring, using power drill, and pulls or pushes wiring through opening. Traces out short circuits in wiring, using knowledge of wiring and test meter. Assists in lifting, positioning, and fastening objects, such as wiring, conduit, and motors. Performs minor repairs, such as replacing fuses, light sockets, bulbs, and switches, using hand tools. Maintains tools and equipment and keeps supplies and parts in order. Disassembles defective electrical equipment, replaces defective or worn parts, and reassembles equipment, using hand tools.

ELECTRICIAN  
S.O.C. #47-2111  
Plans layout, installs, and repairs wiring, electrical fixtures, apparatus, and control equipment: Plans new or modified installations to minimize waste of materials, provide access for future maintenance, and avoid unsightly, hazardous, and unreliable wiring, consistent with specifications and local electrical codes. Prepares sketches showing location of wiring and equipment, or follows diagrams or blueprints, ensuring that concealed wiring is installed before completion of future walls, ceilings, and flooring. Measures, cuts, bends, threads, assembles, and installs electrical conduit, using tools, such as hacksaw, pipe threader, and conduit bender. Pulls wiring through conduit. Splices wires by stripping insulation from terminal leads, using knife or pliers, twisting or soldering wires together, and applying tape or terminal caps. Connects wiring to lighting fixtures and power equipment, using hand tools. Installs control and distribution apparatus, such as switches, relays, and circuit-breaker panels, fastening in place with screws or bolts, using hand tools and power tools. Connects power cables to equipment, such as electric range or motor, and installs grounding leads. Tests continuity of circuit to ensure electrical compatibility and safety of components, using testing instruments, such as ohmmeter, battery and buzzer, and oscilloscope. Observes functioning of installed equipment or system to detect hazards and need for adjustments, relocation, or replacement. May repair faulty equipment or systems. May be required to hold license. May cut and weld steel structural members, using flame-cutting and welding equipment.

MAINTENANCE HELPER  
S.O.C. #49-9098  
Assists in repairing and maintaining machinery, equipment, physical structures, and plumbing and electrical systems of industrial establishment, using hand tools and power tools: Dismantles machines or equipment, replaces defective parts and motors, and adjusts feed mechanisms. Cleans and lubricates machine parts, such as shafts, pulleys, gears, and bearings, using rags, brushes, grease gun, and oilcan. Replaces or repairs machine belts. Removes dust, dirt, grease, and waste material from machines. Paints machines or equipment to prevent corrosion. Bends and cuts conduit and wire, and drills holes in walls, floors, and ceilings for electrical connections. Connects wire to motors, fixtures, and other electrical equipment, replaces switches and fuses, and splices wire and insulates wire with friction tape. Bends, cuts, and threads pipe, cuts openings in walls, ceilings, and floors for pipes, and seals pipe joints with sealing compound. Cuts out and joins parts for worktables, benches, shelves and other furnishings, using power tools and hand tools. Patches or replaces plaster or plaster board and paints walls, ceilings, and trim of building. Clears clogged drains, and replaces plumbing fixtures. May operate welding machine to repair or join metal parts.
MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-2021</td>
<td>Retail/Counter Clerk</td>
<td>R4</td>
<td>9-12</td>
<td>M2</td>
<td>4-6</td>
<td>L4</td>
<td>9-12</td>
</tr>
<tr>
<td>47-3013</td>
<td>Electrician Helper</td>
<td>R3</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L2</td>
<td>4-6</td>
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<td>49-9098</td>
<td>Maintenance Helper</td>
<td>R3</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L2</td>
<td>4-6</td>
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<tr>
<td>47-2111</td>
<td>Electrician</td>
<td>R4</td>
<td>9-12</td>
<td>M4</td>
<td>9-12</td>
<td>L3</td>
<td>7-8</td>
</tr>
</tbody>
</table>

EVALUATION CRITERIA

NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and /or Competent Level.

Test: Electrical Power and Transmission Installers
Test Code: 7747

Areas Covered on NOCTI exam:
- Basic Safety
- Construction Math
- Hand Tools
- Power Tools
- Testing Equipment
- Blueprint Reading
- Residential Cabling Technology
- Anchors and Supports
- Raceways
- Cable Types and Installations
- Switches and Receptacles Circuits
- Fixtures
- Wired Devices
- Green Technology
- Electrical Service
- National Electric Code

Minimum Time Requirements
The Electrical Technology program will consist of a two-year sequence with a minimum of 720 instructional hours

Educational Resources:
Textbook: House Wiring
Publisher: Cengage Learning
### Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
<td></td>
<td>Applications and Instruction on Rough Wiring</td>
<td>Installation and Instruction on Fixtures</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Finish Work</td>
<td>Troubleshooting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Service Installation</td>
<td>Electrical Repairs</td>
</tr>
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<td></td>
<td>Cabinet Installation</td>
<td>Energy Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Introduction to Blueprints and Schematics</td>
<td>Applications and Installation of Low Voltage</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Data Networks, Installation and Applications</td>
</tr>
<tr>
<td><strong>ENGLISH</strong></td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
</tr>
<tr>
<td><strong>MATH</strong></td>
<td>Algebra I</td>
<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>SCIENCE</strong></td>
<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
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<tr>
<td><strong>HUMANITIES</strong></td>
<td>Civics</td>
<td>U.S. History</td>
<td>World History</td>
<td></td>
</tr>
<tr>
<td><strong>OTHER</strong></td>
<td>Foreign Language</td>
<td>Foreign Language</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER**

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Electrical Technology.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

**POTENTIAL CERTIFICATIONS EARNED AT EASTERN**

- **OSHA 10**
  This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction safety and health hazards which a worker may encounter at a construction site. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards.

**POST-SECONDARY OPPORTUNITIES**

- Penn College of Technology
- Bucks County Community College
- Montgomery County Community College
ELECTRICAL TECHNOLOGY
Career Pathways

START AT EASTERN
Technical Academic Education

CERTIFICATION/APPRENTICESHIP
Specialized Technical Training

CERTIFICATE PROGRAMS THAT ALIGN:
- Thaddeus Stevens College of Technology
- Penn College of Technology

TWO/FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

BACHELOR DEGREE PROGRAMS THAT ALIGN:
- Penn College of Technology
- Penn State University
- Drexel University

EASTERN CERTIFICATE OF COMPLETION/PRE-APPRENTICESHIP CREDIT

CAREER OBJECTIVES:
- Electrician’s Helper
- Maintenance Helper
- Electrician

APPRENTICESHIP FOR JOURNEYMAN CERTIFICATE/ELECTRICIAN:
- 8,000 work hours for apprenticeship: 4-5 years
- 576 classroom hours for apprenticeship: 4 years

INDUSTRY CERTIFICATE
- Occupational Safety & Health Administration
- Ladder Safety
- S/P2

ENTER WORKFORCE AS
PRE-APPRENTICE MAINTENANCE HELPER
ADT Commercial
Orkin Electric Systems
J.F. Electric, Inc.

APPRENTICE WORKING TOWARDS JOURNEYMAN ELECTRICIAN CERTIFICATE

BUILDING AUTOMATION TECHNICIAN ENGINEER PROJECT MANAGER
CM3
Communication & Power Systems, Inc.

PECO
Reuter and Hanney, Inc.
HEATING, VENTILATION, & AIR CONDITIONING

PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to install, repair and maintain domestic heating, air conditioning systems. Students will be expected to convey their knowledge along with application of basic principles involved in conditioning of air (cooling and heating); filtering and controlling humidity; operating characteristics of various units and parts; blueprint reading; use of technical reference manuals; the diagnosis of malfunctions; overhaul, repair and adjustment of units and parts such as compressors, connections; and repair of electric/electronic. Most instruction is conveyed in the laboratory through demonstrations and detailed instructions using hands on training aids. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in this industry. One-year seniors will be considered if space is available in the program.

This course will develop skills in the use of HVAC tools, equipment, materials and foremost, safety. The students will be able to receive training on demonstrators and HVAC equipment in group and individual projects. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in this industry.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
HEATING, AIR CONDITIONING, VENTILATION AND REFRIGERATION MAINTENANCE TECHNOLOGY/TECHNICIAN Code: 47.0201
An instructional program that prepares individuals to apply technical knowledge and skills to install, repair and maintain commercial and domestic heating, air conditioning and refrigeration systems. Instruction includes theory and application of basic principles involved in conditioning of air (cooling and heating); filtering and controlling humidity; operating characteristics of various units and parts; blueprint reading; use of technical reference manuals; the diagnosis of malfunctions; overhaul, repair and adjustment of units and parts such as pumps, compressors, valves, springs and connections; and repair of electric/electronic and pneumatic control systems.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Air Conditioning 2010

Course Objectives
This program prepares the student for success as a:

**HVAC HELPER**
S.O.C. #49-9098
Assists workers engaged in installing, repairing, and servicing industrial, commercial, and residential environmental-control systems, performing any combination of following duties: Cuts, punches, flanges, shears, and solders sheet metal ducts and parts, using hand tools and portable power tools. Cuts threads and packs pipes. Cements insulation in place over finished piping or tubing. Passes electrical wire through conduit, splices wire connections, and tapes wire. Assembles sheet metal components of prefabricated furnaces, using hand tools. Replaces exhausted or defective containers of refrigerant with new refrigerant. Lubricates fans, motors, and control units. Installs air and water filters in completed assembly.
Course Objectives
This program prepares the student for success as a:

HVAC TECHNICIAN
S.O.C. #49-9021
Installs, services, and repairs environmental control systems in residences, department stores, office buildings, and commercial establishments, utilizing knowledge of refrigeration theory, pipefitting, and structural layout: Mounts compressor and condenser units on platform or floor, using hand tools, following blueprints or engineering specifications. Fabricates, assembles, and installs ductwork and chassis parts, using portable metalworking tools and welding equipment. Installs evaporator unit in chassis or in air duct system, using hand tools. Cuts and bends tubing to correct length and shape, using cutting and bending equipment and tools. Cuts and threads pipe, using machine-threading or hand-threading equipment. Joins tubing or pipe to various refrigerating units by means of sleeves, couplings, or unions, and solders joints, using torch, forming complete circuit for refrigerant. Installs expansion and discharge valves in circuit. Connects motors, compressors, temperature controls, humidity controls, and circulating-ventilation fans to control panels and connects control panels to power source. Installs air and water filters in completed installation. Injects small amount of refrigerant into compressor to test systems, and adds Freon gas to build up prescribed operating pressure. Observes pressure and vacuum gauges and adjusts controls to ensure efficient operation. Tests joints and connections for gas leaks, using gauges or soap-and-water solution. Wraps pipes in insulation batting and secures them in place with cement or wire bands. Replaces defective breaker controls, thermostats, switches, fuses, and electrical wiring to repair installed units, using electrician’s hand tools and test equipment.

MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
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<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
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<tr>
<td>49-9021</td>
<td>HVAC Technician</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>49-9098</td>
<td>HVAC Helper</td>
<td>R3</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L2</td>
<td>4-6</td>
</tr>
</tbody>
</table>

Minimum Time Requirements
The HVAC program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:
Textbook: HVAC Residential Construction Academy, 2nd Edition, Publisher: Delmar Cengage Learning

EVALUATION CRITERIA
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: HVAC Maintenance Technology
Test Code: 8297

Areas Covered on NOCTI exam:
- Basic Safety
- Introduction to HVAC
- Tools for HVAC/R
- Blueprint Reading
- Piping Practices
- Basic Electricity
- Introduction to Cooling
- Introduction to Heating
- Air Distribution Systems
- Introduction to Hydronic Systems
- Lead Detection, Evacuation, Recovery, and Charging
- Troubleshooting Gas Heating
- Troubleshooting Cooling
- Heat Pumps
- Computer Fundamentals
CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for HVAC.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Potential Certifications earned at EASTERN:

- **OSHA 10 Certification**
  This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site.
  The training covers a variety of construction safety and health hazards which a worker may encounter at a construction site. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards. This is is OAC required certification.

- **EPA 608 Certification**
  The Federal Government of the United States requires all individuals who open a system or container holding a controlled refrigerant to be certified per Section 608 of the Federal Clean Air Act. It specifies that all persons who maintain, service, repair, or dispose of appliances that contain regulated refrigerants be certified in proper refrigerant handling techniques by passing a proctored EPA 608 examination.

- **Gastite Certificate**
  This is an OAC recommended certification.

- **TracPipe Certificate**
  This is an OAC recommended certification.

POST-SECONDARY OPPORTUNITIES

- Montgomery County Community College
- Thaddeus Stevens School
- Penn State Abington
- Penn College of Technology

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**Recommended Scope and Sequence - SECONDARY SCHOOL**

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<tbody>
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<td></td>
<td></td>
<td>Electrical Applications</td>
<td>Air Conditioning</td>
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<td></td>
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<td></td>
<td>Heating and Furnace Systems</td>
<td>Heating and Furnace Systems</td>
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<td></td>
<td>Ductwork and Air Transfer systems</td>
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<td></td>
<td>Troubleshooting</td>
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<td>College Prep English II</td>
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</table>
HEATING, VENTILATION & AIR CONDITIONING

Career Pathways

START AT EASTERN
Technical Academic Education

TWO YEAR OPTIONS
Specialized Technical Training/College Education

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

CERTIFICATE PROGRAMS THAT ALIGN:
- Air Conditioning, Refrigeration, Heating
- Brightwood Career Institute HVAC/R

EASTERN CERTIFICATE OF COMPLETION

CAREER OBJECTIVES:
- HVAC Technician
- HVAC Helper

INDUSTRY CERTIFICATE
- S/P2 – Construction
- Gastite • Tracpipe
- Occupational Health & Safety Admin

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
- Thaddeus Stevens College of Technology
- Penn College of Technology

ENTER WORKFORCE AS

HVAC HELPER
Unique Heating and Cooling
R.D. Bitzer Co, Inc.
Delbar Heating & Air Conditioning

HVAC HELPER
MOVING INTO TECHNICIAN OR SUPERVISOR ROLE
Huntingdon Mechanical
Rossi Mechanical

HVAC HELPER
WORK TOWARD TECHNICIAN
Weinstein Supply
Philadelphia Owners Association

APPRENTICESHIP:
- Steamfitters Local 420 Apprenticeship

BACHELOR DEGREE PROGRAMS THAT ALIGN:
- Penn College of Technology
- Williamson Trade School

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
- Residential HVAC Tech
- Mechanical Engineer
- Insurance Consultant
- Building Maintenance

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ALLIED HEALTH

PROGRAM DESCRIPTION
The Allied Health Program is designed for college preparatory high school students who are interested in pursuing a medical/health science career following high school. The program is designed to promote careers in health care, and is unique in that it will have students involved in job shadowing opportunities. Students will report daily to class where they will receive theoretical and technical instruction from a full time Eastern Instructor. In addition, they will participate in scheduled job shadowing opportunities in order to gain practical experience while working alongside the individual professionals in their specific departments. It further allows the students to interact with individuals who are actively employed in these careers and thus enables the students to make a more informed career choice. The curriculum is designed to provide students with the necessary information and experiences to make meaningful decisions. Students can be dually enrolled with MCCC and earn three college credits as part of the Allied Health Program – these credits will be for the Medical Terminology Course as taught at MCCC.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION
HEALTH PROFESSIONS AND RELATED CLINICAL SCIENCES, OTHER Code: 51.999
This program prepares individuals to apply knowledge and skills in the health occupations. Instruction is provided in the basic skills in a variety of areas associated with health occupations such as health and medical services, pharmaceutical and medical instruments and supplies. Instruction includes but is not limited to foundations of health (medical terminology); anatomy and physiology; legal, ethical and economic aspects of health care; clinical laboratory procedures; basic health occupational skills; aseptic techniques; OSHA regulations; and infection control. Clinical education is an integral part of the program. Science and math taught by certificated science and math teachers will be coordinated and deemed essential for students to successfully reach their career objectives.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Health Related Technology 2214
Health Assistant 2202

Course Objectives
This program prepares the student for success as a:

PHYSICAL THERAPIST ASSISTANT
S.O.C. #31-2021
Administers physical therapy treatments to patients, working under direction of and as assistant to physical therapist: Administers active and passive manual therapeutic exercises, therapeutic massage, and heat, light, sound, water, and electrical modality treatments, such as ultrasound, electrical stimulation, ultraviolet, infrared, and hot and cold packs. Administers traction to relieve neck and back pain, using intermittent and static traction equipment. Instructs, motivates, and assists patients to learn and improve functional activities, such as perambulation, transfer, ambulation, and daily-living activities. Observes patients during treatments and compiles and evaluates data on patients’ responses to treatments and progress and reports orally or in writing to physical therapist. Fits patients for, adjusts, and trains patients in use and care of...
orthopedic braces, prostheses, and supportive devices, such as crutches, canes, walkers, and wheelchairs. Confers with members of physical therapy staff and other health team members, individually and in conference, to exchange, discuss, and evaluate patient information for planning, modifying, and coordinating treatment programs. Performs clerical duties, such as taking inventory, ordering supplies, answering telephone, taking messages, and filling out forms. May measure patient’s range-of-joint motion, length and girth of body parts, and vital signs to determine effects of specific treatments.

**RADIology TECHNOlogist**

**S.O.C. #29-2034**

Directs and coordinates activities of radiology or diagnostic imaging department in hospital or other medical facility: Reviews work schedules and assigns duties to workers to maintain patient flow and achieve production goals. Oversees staff in operation of imaging equipment, such as x-ray machine, fluoroscope, CT (computerized tomography) scanner, or MRI (magnetic resonance imaging) equipment, evaluates accuracy and quality of images, and provides technical assistance. Demonstrates new techniques, equipment, and procedures to staff. Implements and monitors radiation safety measures to ensure safety of patients and staff and compliance with government regulatory requirements. Recommends personnel actions, such as performance evaluations, promotions, and disciplinary measures. Coordinates purchase of supplies and equipment and makes recommendations concerning department operating budget.

**REGISTERED NURSE**

**S.O.C. #29-1141**

Provides general nursing care to patients in hospital, nursing home, infirmary, or similar health care facility: Administers prescribed medications and treatments in accordance with approved nursing techniques. Prepares equipment and aids physician during treatments and examinations of patients. Observes patient, records significant conditions and reactions, and notifies supervisor or physician of patient’s condition and reaction to drugs, treatments, and significant incidents. Takes temperature, pulse, blood pressure, and other vital signs to detect deviations from normal and assess condition of patient. May rotate among various clinical services of institution, such as obstetrics, surgery, orthopedics, outpatient and admitting, pediatrics, and psychiatry. May prepare rooms, sterile instruments, equipment and supplies, and hand items to surgeon, obstetrician, or another medical practitioner. May make beds, bathe, and feed patients. May serve as leader for group of personnel rendering nursing care to number of patients.

**RESPIRATORY THERAPIST**

**S.O.C. #29-1126**

Administers respiratory therapy care and life support to patients with deficiencies and abnormalities of cardiopulmonary system, under supervision of physician and by prescription: Reads prescription, measures arterial blood gases, and reviews patient information to assess patient condition and determine requirements for treatment, such as type and duration of therapy, and medication and dosages. Determines most suitable method of administering inhalants, precautions to be observed, and modifications which may be needed that will be compatible with physician’s orders. Sets up and operates devices, such as mechanical ventilators, therapeutic gas administration apparatus, environmental control systems, and aerosol generators. Operates equipment to ensure specified parameters of treatment, such as volume, gas concentration, humidity, and temperature, and to administer medicinal gases and aerosol drugs to patients. Monitors patient’s physiological responses to therapy, such as vital signs, arterial blood gases, and blood chemistry changes. Performs bronchopulmonary drainage and assists patient in performing breathing exercises. Performs pulmonary function tests to be used by physician in diagnosis of case. Observes equipment function and adjusts equipment to obtain optimum results to therapy. Consults with physician in event of adverse reactions. Maintains patient’s chart that contains pertinent identification and therapy information. Inspects and tests respiratory therapy equipment to ensure equipment is functioning safely and efficiently. Orders repairs when needed. Demonstrates respiratory care procedures to trainees and other health care personnel.

**LICENSED PRACTICAL NURSE**

**S.O.C. #29-2061**

Provides prescribed medical treatment and personal care services to ill, injured, convalescent, and handicapped persons in such settings as hospitals, clinics, private homes, schools, sanitariums, and similar institutions: Takes and records patients’ vital signs. Dresses wounds, gives enemas, douches, alcohol rubs, and massages. Applies compresses, ice bags, and hot water bottles. Observes patients and reports adverse reactions to medication or treatment to medical personnel in charge. Administers specified medication, orally or by subcutaneous or intermuscular injection, and notes time and amount on patients’ charts. Assembles and uses such equipment as catheters, tracheotomy tubes, and oxygen suppliers. Collects samples, such as urine, blood, and sputum, from patients for testing and performs routine laboratory tests on samples. Sterilizes equipment and supplies, using germicides, sterilizer, or autoclave. Prepares or examines food trays for prescribed diet and feeds patients. Records
food and fluid intake and output. Bathes, dresses, and assists patients in walking and turning. Cleans rooms, makes beds, and answers patients’ calls. Washes and dresses bodies of deceased persons. Must pass state board examination and be licensed. May assist in delivery, care, and feeding of infants. May inventory and requisition supplies. May provide medical treatment and personal care to patients in private home settings.

Minimum Time Requirements
The Allied Health program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:
Textbook: Simmers Diversified Health Occupation
Publisher: Cengage Learning
Textbook: Medical Terminology: Building a Medical Vocabulary, Publisher: Elsevier Publishing

EVALUATION CRITERIA
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Health Assisting
Test Code: 4143

Areas Covered on NOCTI exam:
- First Aid and General Safety
- Medical Terminology
- Body Systems
- Observation and Communication
- Documentation and Legal Issues of the Health Assisting Profession
- Health Assistant Skills

MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
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<th>Language Level</th>
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</thead>
<tbody>
<tr>
<td>31-2021</td>
<td>Physical Therapist</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
<td>9-12</td>
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<tr>
<td>29-2034</td>
<td>Radiology</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M4</td>
<td>9-12</td>
<td>L5</td>
<td>Col 1-2</td>
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<tr>
<td>29-1141</td>
<td>Registered Nurse</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M4</td>
<td>9-12</td>
<td>L5</td>
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<tr>
<td>29-1126</td>
<td>Respiratory</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<td>29-2061</td>
<td>Licensed Practical</td>
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<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
<td>9-12</td>
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</tbody>
</table>

Prerequisites:
- Algebra I and II, College prep biology and College prep chemistry with a lab. Students are required to have a “C” or better in these classes.
- High School GPA of 2.5 or higher required.
- Eligible for acceptance into a post-secondary school
- Physical exam and police check mandated by State Law
- No disciplinary issues at the participating high school
CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Allied Health.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

CERTIFICATIONS EARNED AT EASTERN
- CPR/First Aide Certification
  The course teaches students critical skills and knowledge needed to respond to and manage a first aid or sudden cardiac arrest emergency in the first few minutes until the emergency medical services (EMS) arrives. Content includes how to treat bleeding, sprains, broken bones, shock and other first aid emergencies, as well as perform CPR and use an AED.

POST-SECONDARY OPPORTUNITIES
- Aria School of Nursing
- Montgomery County Community College
- LaSalle University
- Holy Family University
- Gwynedd Mercy College
- York College
- Temple University
- Cedar Crest College
- Roxborough Hospital School of Nursing
- Jefferson University Hospital School of Nursing
- West Chester University
- Drexel University
- DeSales University
- Villanova University

Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>TECHNICAL</td>
<td></td>
<td></td>
<td></td>
<td>Maintaining a clean, safe and healthy environment</td>
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<td>Providing Personal Care</td>
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<td>Providing Restorative Care</td>
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<td>Science with Lab</td>
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<td>College Prep English III</td>
<td>College Prep English IV</td>
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<td>Pre- Algebra</td>
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<td>Geometry</td>
<td>Advanced Math</td>
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<tr>
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<td>Earth Science</td>
<td>Human Anatomy</td>
<td>Biology with Lab</td>
<td>Algebra II</td>
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<td>HUMANITIES</td>
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<tr>
<td>OTHER</td>
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</tbody>
</table>
ALLIED HEALTH
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

CERTIFICATE PROGRAMS THAT ALIGN:
Einstein Medical Center’s School of Radiologic Technology

CAREER OBJECTIVES:
Career requiring post-secondary education

CERTIFICATE OF COMPLETION

INDUSTRY CERTIFICATE
Basic Life Support for Healthcare Providers & Heartsaver First Aid

TWO YEAR OPTIONS
Specialized Technical Training/College Education

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Manor College
• Montgomery County Community College

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
• Registered Nurse
• Physician’s Assistant
• Physician
• Physical Therapist

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Penn College of Technology
• Gwynedd Mercy University

ENTER WORKFORCE AS
PATIENT CARE TECHNICIAN
Medical Office Admin Assistant
Abington-Jefferson Hospital
Holy Redeemer Hospital

EMT
LPN
Radiology Tech
Ultrasound Technician
Phlebotomist
Paramedic

REGISTERED NURSE
Einstein Healthcare Network
EASTERN’s Practical Nursing
Ann’s Choice
Reading Hospital
VETERINARY SCIENCE

PROGRAM DESCRIPTION
The Veterinary Science Program is designed for college preparatory high school students who are interested in pursuing a career related to the care of animals following high school. The program is designed to promote careers in veterinary sciences, and it will provide students with theoretical as well as hands on learning opportunities with small animals. Students will report daily to class where they will receive theoretical and technical instruction from a full time Eastern Instructor. In addition, coursework will be enhanced with guest speakers from the industry and Expanded Learning Opportunities held in conjunction with local business and industry.

The curriculum is designed to provide students with the necessary information and experiences to make meaningful decisions. The hands-on grooming experience takes place under the direction of the full-time program instructor and potentially in collaboration with mentors/partners in the Veterinary Sciences fields.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

VETERINARY ASSISTANT Code: 1.8301
An instructional program that prepares individuals to support veterinarians by providing assistance during animal examinations, treatment administration and monitoring; by keeping animal and related health record information; and by performing a range of selected practice-related duties. This program is designed to provide instruction in preparing the animal for examination and treatment, sterilizing equipment and performing selected routine laboratory procedures under direct supervision of the veterinarian. Instruction also includes maintaining medical and business records, charting and scheduling activities and a wide range of practice-related duties as applied to animal health care, the biomedical field and the pet industry. The health occupational planned courses include the study of life sciences with emphasis on animal anatomy, physiology, diseases, reproduction, genetics, nutrition, animal laboratory procedures, aseptic technique, OSHA regulations, infection control and procedures. Clinical education is an integral part of the program. Science and math taught by certificated science and math teachers will be coordinated and deemed essential for students to successfully reach their career objectives.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Veterinarian Assistant 2550
Course Objectives
This program prepares the student for success as a:

**VETERINARY TECHNICIAN**
S.O.C. #29-2056
A Veterinary Technician performs a variety of animal health care duties to assist the veterinarian in settings such as clinics, zoos, research laboratories, kennels, and commercial facilities. They administer injections, performs venipunctures, apply wound dressings, clean teeth, and take vital signs of the animal, under supervision of veterinarian. The Veterinary Technician prepares patient, medications, and equipment for surgery, and hands instruments and materials to the veterinarian during surgical procedures. Other duties may include performing routine laboratory tests, care for and feed laboratory animals, and assist professional personnel with research projects in commercial, public health, or research laboratories. They may assist veterinarian to artificially inseminate animals and bathe and groom small animals, perform and monitor anesthesia, dental prophylaxis and help facilitate a variety of specialized procedures. Post-Secondary Education is required for state licensure.

**VETERINARY ASSISTANT**
S.O.C. #31-9096
The Veterinary Assistant may feed, water, and examine pets and other non-farm animals for signs of illness, disease, or injury in laboratories and animal hospitals and clinics. They clean and disinfect cages and work areas and sterilize laboratory and surgical equipment. They prepare treatment rooms for examination of animals, and holds or restrains animals during examination, treatment, or inoculation. They may provide routine post-operative care, administer medication orally or topically, or prepare samples for laboratory examination under the supervision of veterinary or laboratory animal technologists or technicians, veterinarians, or scientists. Post-Secondary Education is recommended.

**Minimum Time Requirements**
The Veterinary Sciences program will consist of a two-year sequence with a minimum of 720 instructional hours.

**Educational Resources:**
Textbook: *Veterinary Assisting Textbook*
Publisher: Elsevier
Textbook: *Veterinary Assisting Workbook*
Publisher: Elsevier

**EVALUATION CRITERIA**
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: Small Animal Science and Technology
Test Code: 2003

Areas Covered on NOCTI exam:
- Safety and Sanitation
- Animal Care Management
- Grooming
- Genetics and Reproduction
- Management of Small Animal Related Businesses
- Animal First Aid
- Health and Disease Control
- Nutrition

**MATH, LANGUAGE AND REASONING LEVELS**

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>29-2056</td>
<td>Veterinary Technician</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
<td>9-12</td>
</tr>
<tr>
<td>31-9096</td>
<td>Veterinary Assistant</td>
<td>R5</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L4</td>
<td>9-12</td>
</tr>
</tbody>
</table>

**Prerequisites:**
- Grade of ‘C’ or better in Algebra I & II
- Grade of ‘C’ or better in Biology or Advanced Science Course (College Prep Level)
- High school GPA of 2.5 or higher preferred
- No Animal Allergies
- No disciplinary issues at the participating high school
- Good attendance
CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earned a grade of 70% or greater and complete all competencies designated for Veterinary Assistant.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must meet be a program completer.

CERTIFICATIONS EARNED AT EASTERN
- **OSHA Healthcare**
The OSHA 10-Hour General Industry (Healthcare) training course provides training for entry-level workers and employers on the recognition, avoidance, abatement, and prevention of safety and health hazards in workplaces in healthcare industry. The program also provides information regarding workers’ rights, employer responsibilities, and how to file a complaint. Through this training, OSHA helps to ensure that workers are more knowledgeable about workplace hazards and their rights. Students who successfully complete the CareerSafe OSHA 10-Hour General Industry (Healthcare) course receive an OSHA 10-Hour General Industry wallet card from the OSHA Training Institute (OTI).

- **Requirements to Certification for Veterinary Technician in Pennsylvania**
Post-secondary education is a requirement. Initially potential candidates for program admission would minimally need a high school diploma or equivalent. A minimum GPA in high school of 2.0 of better and successful completion of English, biology, chemistry and other sciences, communications, humanities and math classes are highly desired for program admission. In Pennsylvania it is necessary to choose a program accredited by the American Veterinary Medical Association’s Committee on Veterinary Technician Education and Activities. Pennsylvania requires licensure of veterinary technicians from an accredited veterinary technician program. Post college work will include successful completion of the VTNE exam required to become a licensed veterinary technician. Lifelong learning requirements would include 16 hours of continuing education every two years in order to keep the license current.

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**Recommended Scope and Sequence - SECONDARY SCHOOL**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
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<th>Grade 12</th>
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</thead>
<tbody>
<tr>
<td>TECHNICAL</td>
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<td></td>
<td>Safety and Sanitation</td>
<td>Grooming</td>
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<td></td>
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<td></td>
<td>Animal Care Management</td>
<td>Genetics and Reproduction</td>
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<td></td>
<td>Grooming</td>
<td>Management of Small Animal</td>
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<tr>
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<td></td>
<td>Animal First Aid</td>
<td>Related Business</td>
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<tr>
<td></td>
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<td></td>
<td>Health and Disease Control</td>
<td>Leadership</td>
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<td>Nutrition</td>
<td>Career Readiness</td>
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<tr>
<td>ENGLISH</td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
</tr>
<tr>
<td>MATH</td>
<td>Algebra I</td>
<td>Algebra II</td>
<td>Geometry</td>
<td>Advanced Math</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Biology with Lab</td>
<td>Human Anatomy</td>
<td>Chemistry with Lab</td>
<td>Advanced Science</td>
</tr>
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<td>HUMANITIES</td>
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<tr>
<td>OTHER</td>
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</tbody>
</table>
AUTOMOTIVE TECHNOLOGY

PROGRAM DESCRIPTION
A student enrolled in this two-year, half-day program benefits from a combination of Classroom Instruction and hands-on experience needed to carry out varied automotive repairs. Students will be expected to convey their knowledge along with demonstrating their understanding of the underlying concepts. Most instruction is conveyed in the laboratory through demonstrations and detailed instructions using hands-on training aids and live work projects. Lecturing and classroom activities are incorporated, textbooks, videos, Extended Learning Opportunities, and the use of the CDX Global Automotive Technology Curriculum. This course will develop skills in the use of automotive tools, equipment, materials and foremost, safety. The students will be able to receive training on repairing automobiles and light duty trucks on shop and individual projects. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in this industry. One-year seniors will be considered if space is available in the program.

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

AUTOMOBILE/AUTOMOTIVE MECHANICS TECHNOLOGY/TECHNICIAN Code: 47.0604
An instructional program that prepares individuals to apply technical knowledge and skills to engage in the servicing and maintenance of all types of automobiles and light trucks. This program includes instruction in the diagnosis and testing, including computer analysis, of malfunctions in and repair of engines, fuel, electrical, cooling and brake systems and drive train and suspension systems. Instruction is also given in the adjustment and repair of individual components and systems such as cooling systems, drive trains, fuel system components and air conditioning and includes the use of technical repair information and the state inspection procedures.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Automotive Technician 2575

Course Objectives
This program prepares the student for success as a:

AUTOMOTIVE TECHNICIAN TRAINEE
S.O.C. #49-3023
Repairs and overhauls automobiles, buses, trucks, and other automotive vehicles: Examines vehicle and discusses with customer or nature and extent of damage or malfunction. Plans work procedure, using charts, technical manuals, and experience. Raises vehicle, using hydraulic jack or hoist, to gain access to mechanical units bolted to underside of vehicle. Removes unit, such as engine, transmission, or differential, using wrenches and hoist. Disassembles unit and inspects parts for wear, using micrometers, calipers, and thickness gauges. Repairs or replaces parts, such as pistons, rods, gears, valves, and bearings, using mechanic’s hand tools. Overhauls or replaces carburetors, blowers, generators, distributors, starters, and pumps. Rebuilds parts, such as crankshafts and cylinder blocks, using lathes, shapers, drill presses, and welding equipment. Rewires ignition system, lights, and instrument panel. Relines and adjusts brakes, aligns front end, repairs or replaces shock absorbers, and solders leaks in radiator. Mends damaged body and fenders by hammering out or filling in dents and welding broken parts. Replaces and adjusts headlights, and installs and repairs accessories, such as radios, heaters, mirrors, and windshield wipers.
MAINTENANCE AND LIGHT REPAIR AUTO TECHNICIAN
S.O.C. #49-2023
Assists automobile mechanic in repairing automobiles, buses, trucks, and other automotive vehicles: Raises vehicle to specified level, using hydraulic jack. Removes and disassembles unit, such as engine, transmission, or differential, to be repaired, using hand tools and power tools. Cleans unit, using prescribed solvent. Lubricates and washes vehicle.

Minimum Time Requirements
The Automotive Technology program will consist of a two-year sequence with a minimum of 720 instructional hours.

Educational Resources:
Textbook: *CDX Automotive*
Publisher: Jones and Bartlett Learning
Textbook: *CDX Automotive online*
Publisher: Jones and Bartlett Learning

EVALUATION CRITERIA
NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: Automotive Mechanics Technology PA
Test Code: 7837
Areas Covered on NOCTI exam:
- Orientation
- Safety
- Tools/Fasteners
- Suspension and Steering
- Brakes
- Electrical/Electronic Systems
- Engine Performance

POST-SECONDARY OPPORTUNITIES
- Penn College of Technology
- Universal Technical Institute
- Lincoln Technology Institute
- Automotive Training Center

MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
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<tr>
<td>49-3023</td>
<td>Automotive Technician Trainee</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
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<td>49-2023</td>
<td>MLR Auto Technician</td>
<td>R2</td>
<td>4-6</td>
<td>M1</td>
<td>4-6</td>
<td>L2</td>
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CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issues to all students who earn a 70% or greater and complete all competencies designated for Automotive Technology.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

CERTIFICATIONS EARNED AT EASTERN

- **S/P2-Automotive**
  S/P2 is the automotive industry standard for online safety and pollution prevention training, with courses that provide the knowledge and skills necessary for employees and students to complete their work effectively, efficiently, and safely. S/P2 industry-specific content helps managers, technicians, safety supervisors, shop owners, instructors, and students alike stay safe and compliant on the job or in the classroom. S/P2 covers everything from basic workplace safety topics to targeted training for specific industry segments or groups of students. This an OAC required certification.

- **Automotive Service Excellence Certification**
  The ASE Student Certification program is specially designed to evaluate and certify students who are near the end of their studies in the areas of Automobile Service, Collision Repair & Refinishing, and M/H Truck. The National Institute for Automotive Service Excellence (ASE) developed the exams in partnership with Automotive Youth Educational Systems (AYES), National Automotive Technicians Education Foundation (NATEF), and SkillsUSA. Eastern will prepare students to sit for the certification. This is an OAC recommended certification.

- **Pa Emissions Inspector**
  A state mandated training program and test required for technicians to receive their state inspection license. This is an OAC recommended certification.

- **Valvoline Oil**
  This is an OAC required certification.

- **Mobile Air Conditioning (MACS)**
  This is an OAC recommended certification.

- **OSHA 10**
  This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction safety and health hazards which a worker may encounter at a construction site. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards. This is an OAC recommended certification.

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### Recommended Scope and Sequence - SECONDARY SCHOOL

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</thead>
<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
<td></td>
<td>Brakes</td>
<td>Manual Drivetrain</td>
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<td></td>
<td>Steering and Suspension</td>
<td>Automatic</td>
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<td>Electrical</td>
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<td>Engine Repair</td>
<td>Engine Performance</td>
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<td>Auto and Manual Drivetrain</td>
<td>Heating and Air Conditioning</td>
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<td>College Prep English II</td>
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<td>Advanced Math</td>
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<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
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<td><strong>HUMANITIES</strong></td>
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</table>
AUTOMOTIVE TECHNOLOGY
Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

EASTERN CERTIFICATE OF COMPLETION

CAREER OBJECTIVES:
- Automotive Tech Trainer
- New Car Prep Tech
- Under Car Specialist

INDUSTRY CERTIFICATE
- Qualified students can take Automotive Service Excellence qualifying exams

TWO YEAR OPTIONS
Specialized Technical Training/College Education

LICENSED PROGRAMS THAT ALIGN:
- Universal Technical Institute
- Automotive Training Center
- Lincoln Tech

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
- Penn College of Technology
- University of Northwestern Ohio
- Thaddeus Stevens College

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

BACHELOR DEGREE PROGRAMS THAT ALIGN:
- Penn College of Technology

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
- Automotive Technician
- Service Writer
- Business Owner
- Dealership Management

ENTER WORKFORCE AS
TECHNICIAN AT DEALERSHIPS AND REPAIR SHOPS
Thompson Toyota, Inc.
Keenan Honda, Inc.
Conicelli Auto Group

SHOP MANAGER | CONTINUED EDUCATION IN ENGINEERING
Willow Grove Auto Repair
Lexus of Willow Grove
Bryner Chevrolet

TECHNICIAN AT DEALERSHIPS THAT INCLUDE TRUCKS AND HIGH-END VEHICLES
Lafferty Chevrolet • Infinity of Willow Grove
Chapman Auto Group
COLLISION REPAIR TECHNOLOGY

with demonstrating their understanding of the underlying concepts. Most instruction is conveyed in the laboratory through demonstrations and detailed instructions using hands-on training aids and live work projects. Lecturing and classroom activities are held to a minimum, using textbooks, videos, and the use of the I-CAR (Inter-Industry Conference on Auto Collision Repair) Live curriculum.

This course will develop skills in the use of body shop tools, equipment, materials and foremost, safety. The students will be able to receive training on repairing small dents, panel replacement, plastic repair, MIG welding, and refinishing on shop and individual projects. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in this industry. One-year seniors will be considered if space is available in the program.

PROGRAM DESCRIPTION
A student enrolled in this two-year half-day program benefits from a combination of classroom instruction and hands-on experience needed to carry out all collision repairs on motor vehicles. Students will be expected to convey their knowledge along

PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

AUTOBODY/COLLISION AND REPAIR TECHNOLOGY/TECHNICIAN Code: 47.0603
An instructional program that prepares individuals to apply technical knowledge and skills to repair damaged automotive vehicles such as automobiles and light trucks. Students learn to examine damaged vehicles and estimate cost of repairs; remove, repair and replace upholstery, accessories, electrical and hydraulic window and seat operating equipment and trim to gain access to vehicle body and fenders; remove and replace glass; repair dented areas; replace excessively damaged fenders, panels and grills; straighten bent frames or unibody structures using hydraulic jacks and pulling devices; and file, grind and sand repaired surfaces using power tools and hand tools. Students refinish repaired surfaces by painting with primer and finish coat.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Automotive Body and Fender 2005
Course Objectives
This program prepares the student for success as a:

AUTOMOTIVE REFINISHER
S.O.C. #49-3021
Paints surfaces of transportation equipment, such as automobiles, buses, trucks, and aircraft, applying knowledge of surface preparation and painting techniques, using spray painting equipment, power tools, and work aids: Cleans, sands, and applies chemical solutions to prepare and condition surfaces prior to painting. Mixes and thins paint or other coating to specified color and consistency per standard formulas or color charts, using spatula or mixing equipment and viscometer. Masks and covers surfaces not to be painted. Sprays specified amount or thickness of primer, protective, decorative, or finish coatings, such as paint, lacquer, sealer, urethane enamel, onto prepared surfaces, using spray equipment. Strips, sands, masks, and repaints surfaces, and blends and polishes finish to match surrounding areas, manually or using portable power tools. May apply or retouch paint, using brush. May lay out and paint insignias, symbols, designs, or other markings on painted surfaces, per blueprints or specifications, using stencils, patterns, measuring instruments, brushes, or spray equipment. May regulate controls on equipment to cure and dry paint or other coatings. May set up portable ventilators, exhaust units, ladders, and scaffolding prior to painting. May operate lifting and moving devices to move materials and equipment and access areas to be painted. May remove accessories from motor vehicles, such as chrome, mirrors, and windshield wipers, prior to repainting.

FRAME/STRUCTURAL REPAIR PERSON
S.O.C. #49-3021.

SHEET METAL COSMETIC REPAIR PERSON
S.O.C. #51-2041
Body-line finisher; body painter, bus; dent remover; door painter, bus; metal bumper; metal shrinker; metal worker; touch-up finisher, metal Repairs damaged bodies and body parts of automotive vehicles, such as automobiles, buses, and light trucks per repair manuals, using hand tools and power tools: Examines damaged vehicles and estimates cost of repairs. Removes upholstery, accessories, electrical window-and-seat-operating equipment, and trim to gain access to vehicle body and fenders. Positions dolly block against surface of dented area and beats opposite surface to remove dents, using hammer. Fills depressions with body filler, using putty knife. Removes damaged fenders, panels, and grills, using wrenches and cutting torch, and bolts or welds replacement parts in position, using wrenches or welding equipment. Straightens bent automobile frames, using pneumatic frame straightening machine. Files, grinds, and sands repaired surfaces, using power tools and hand tools. Refinishes repaired surface, using paint spray gun and sander. Aims headlights, aligns wheels, and bleeds hydraulic brake system. May paint surfaces after performing body repairs and be designated Automobile-Body Repairer, Combination (automotive ser.). May repair or replace defective mechanical parts.

AUTOMOTIVE REFINISHER HELPER
S.O.C. #49-3021
Assists the Automotive Refinisher in all aspects of the career.
## MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
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<tbody>
<tr>
<td>49-3021</td>
<td>Automotive Refinisher</td>
<td>R3</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>51-2041</td>
<td>Sheet Metal/ Cosmetic Repair</td>
<td>R3</td>
<td>7-8</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
</tr>
<tr>
<td>49-3021</td>
<td>Frame/ Structural Repair</td>
<td>R3</td>
<td>7-8</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>49-3021</td>
<td>Automotive Refinisher’s Helper</td>
<td>R2</td>
<td>7-8</td>
<td>M1</td>
<td>4-6</td>
<td>L1</td>
<td>7-8</td>
</tr>
</tbody>
</table>

### Minimum Time Requirements
The Collision Repair Technology program will consist of a two-year sequence with a minimum of 720 instructional hours.

### Educational Resources:
- Textbook: *I-CAR online*
  Publisher: I-CAR
- Textbook: *Motor Auto Body Repair*
  Publisher: Delmar Publishing

### EVALUATION CRITERIA
### NOCTI Test # and Description with major topics
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Collision Repair and Refinishing Technology
Test Code: 3183

Areas Covered on NOCTI exam:
- Safety
- Business Fundamentals
- MIG/GMAW and STRSW
- Structural
- Non-Structural
- Mechanical and Electrical Systems
- Painting and Refinishing
CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER
An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Collision Repair Technology.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Potential Certifications earned at EASTERN:

- **S/P2-Automotive**
  S/P2 is the automotive industry standard for online safety and pollution prevention training, with courses that provide the knowledge and skills necessary for employees and students to complete their work effectively, efficiently, and safely. S/P2 industry-specific content helps managers, technicians, safety supervisors, shop owners, instructors, and students alike stay safe and compliant on the job or in the classroom. S/P2 covers everything from basic workplace safety topics to targeted training for specific industry segments or groups of students.

- **Automotive Service Excellence Certification**
  The ASE Student Certification program is specially designed to evaluate and certify students who are near the end of their studies in the areas of Automobile Service, Collision Repair & Refinishing, and M/H Truck. The National Institute for Automotive Service Excellence (ASE) developed the exams in partnership with Automotive Youth Educational Systems (AYES), National Automotive Technicians Education Foundation (NATEF), and SkillsUSA. Eastern will prepare students to sit for the certification one year after graduation.

### POST-SECONDARY OPPORTUNITIES
- Automotive Training Center
- Penn College of Technology
- Bucks County Community College
- Montgomery County Community College
- Thaddeus Stevens
- Universal Technical Institute
- Ohio Technical College
- DSA Collision Service
- C & C Ford
- Executive Auto Body
- Caliber Collision
- Marty Sussman Honda
- Mondello’s Auto Body
- World Class Auto Body
- Bryner Chevrolet
- Kennedy Collision
- MAACO
- Carvana
- Brohem Auto Body
- Abra

Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
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<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
<td></td>
<td>Disassemble/Assemble</td>
<td>Spray Automotive Paints</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Sanding</td>
<td>Detailsing</td>
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<td></td>
<td></td>
<td></td>
<td>Masking</td>
<td>Repair Structural Components</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Spray Automotive Paints</td>
<td>Electrical, electronics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Welding and Cutting</td>
<td>and Air conditioning</td>
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<td><strong>ENGLISH</strong></td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
</tr>
<tr>
<td><strong>MATH</strong></td>
<td>Algebra I</td>
<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
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<tr>
<td><strong>SCIENCE</strong></td>
<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
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<tr>
<td><strong>HUMANITIES</strong></td>
<td>Civics</td>
<td>U.S. History</td>
<td>World History</td>
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<tr>
<td><strong>OTHER</strong></td>
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</tbody>
</table>
COLLISION REPAIR TECHNOLOGY

Career Pathways

START AT EASTERN
Technical Academic Education

TWO YEAR OPTIONS
Specialized Technical Training/College Education

FOUR YEAR OPTIONS
Advanced Degrees & What They Lead To

PAID INTERNSHIPS CONTINUED AFTER EASTERN:
- Many Collision Repair Technology students continue working for their internship employer

INDUSTRY CERTIFICATE
- I-Car Curriculum
- Automotive Service Excellence
- Safety & Pollution Prevention

EASTERN CERTIFICATE OF COMPLETION

CAREER OBJECTIVES:
- Auto Refinisher
- Sheet Metal/ Cosmetic Repair
- Frame/Structural Repair

CERTIFICATE PROGRAMS THAT ALIGN:
- Automotive Training Center
- Universal Technical Institute
- Pennco Tech

ENTRY LEVEL COLLISION REPAIR SPECIALIST
- Collision Repair Technician
- Paint Technician

DJ’s Auto Repair
- North Penn Collision
- Precision Collision

EXECUTIVE AUTO BODY
Marty Sussman Honda
- DSA Collision Service

COLLISION REPAIR TECHNOLOGY
PAINT TECHNICIAN

JD’S AUTO BODY ESTIMATOR
Mondello’s Autobody
- Prestige Autobody • Faulkner Collision

PAID INTERNSHIPS
CONTINUED AFTER EASTERN:
- Many Collision Repair Technology students continue working for their internship employer

BACHELOR DEGREE PROGRAMS THAT ALIGN:
- Penn College of Technology

WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:
- Collision Repair Specialist
- New Car Designer
- Manufacturing Rep
- Metal Fabricator
- Technical Writer

ENTER WORKFORCE AS

COLLISION REPAIR TECHNOLOGY
PAINT TECHNICIAN

COLLISION REPAIR TECHNOLOGY
PAINT TECHNICIAN

COLLISION REPAIR TECHNOLOGY
PAINT TECHNICIAN
ELECTROMECHANICAL TECHNOLOGY/ELECTROMECHANICAL ENGINEERING

TECHNOLOGY CODE: 15.0403

An instructional program that prepares individuals to apply basic engineering principles and technical skills in both the mechanical and electrical fields. Instruction is planned to provide preparation in the design, development and testing of electromechanical devices and systems such as automatic control systems, servomechanisms, vending machines, elevator controls, missile controls, tape-control machines, and auxiliary computer equipment. Instruction also includes feasibility testing of engineering concepts, systems analysis including designs, selection and testing and application of engineering data and the preparation of written reports and test results in support of mechanical and electrical engineers.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Electro-Mechanical Technology 2109

Course Objectives

This program prepares the student for success as a:

INDUSTRIAL ENGINEERING TECHNICIAN
S.O.C. #17-3026

Studies and records time, motion, methods, and speed involved in performance of maintenance, production, clerical, and other worker operations to establish standard production rate and to improve efficiency: Prepares charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization. Observes workers operating equipment or performing tasks to determine time involved and fatigue rate, using stop watch, motion-picture camera, electrical recorder, and similar equipment. Recommends revision of methods of operation or material handling, alterations in equipment layout, or other changes to increase production or improve standards. Aids in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays.
APPLICATIONS ENGINEER, MANUFACTURING
S.O.C. #17-2199
Plans, designs, and coordinates integration of machinery and equipment into manufacturing process of industrial establishment, applying knowledge of engineering and programming, and using computer, precision-measuring instruments, and drafting tools: Develops and writes equipment specifications, performance requirements, cost analysis, and proposal for integrating machinery and equipment, such as robots, robot controllers, and programmable controllers into manufacturing process, applying knowledge of mechanics, hydraulics, pneumatics, electrical wiring, electronics, programming, and manufacturing requirements, and using computer and calculator. Selects or designs robot end-of-arm tools to meet specifications, using robot manuals and either drafting tools or computer and software programs. Writes operating programs, using existing computer program, or writes own computer programs, applying knowledge of programming language and computer. Oversees installation to ensure machines and equipment are installed and functioning according to specifications. Tests ability of machines, such as robot, to perform tasks, using teach pendant and precision measuring instruments and following specifications. Confers with establishment personnel to implement operating procedures and resolve system malfunctions. Determines parts supply, maintenance tasks, safety procedures, and service schedule required to maintain machines and equipment in prescribed condition. Develops models of alternate processing methods to test feasibility of new applications of system components and recommends implementation of improved procedures. Participates in meetings, seminars, and training sessions to stay apprised of new developments in field. Confers with workers in other departments, such as marketing, legal, and engineering, to provide technical information. May develop and conduct robot and related equipment training programs and demonstrate skills to trainees, using teach pendant, hand tools, precision-measuring instruments, and following schematics, plant drawings, and manufacturer’s specifications.

ELECTRICAL AND ELECTRONICS REPAIRERS, COMMERCIAL AND INDUSTRIAL EQUIPMENT
S.O.C. #49-2094
Lays out, builds, tests, troubleshoots, repairs and modifies developmental and production electronic components, parts, equipment, and systems, such as computer equipment, missile control instrumentation, electron tubes, test equipment, and machine tool numerical controls, applying principles and theories of electronics, electrical circuitry, engineering mathematics, electronic and electrical testing, and physics: Discusses layout and assembly procedures and problems with electronics engineers and draws sketches to clarify design details and functional criteria of electronic units. Assembles experimental circuitry (breadboard) or complete prototype model according to engineering instructions, technical manuals, and knowledge of electronic systems and components. Recommends changes in circuitry or installation specifications to simplify assembly and maintenance. Sets up standard test apparatus or devises test equipment and circuitry to conduct functional, operational, environmental, and life tests to evaluate performance and reliability of prototype or production model. Analyzes and interprets test data. Adjusts, calibrates, aligns, and modifies circuitry and components and records effects on unit performance. Writes technical reports and develops charts, graphs, and schematics to describe and illustrate system’s operating characteristics, malfunctions, deviations from design specifications, and functional limitations for consideration by engineers in broader determinations affecting system design and laboratory procedures. May operate bench lathes, drills, or other machine tools to fabricate parts, such as coils, terminal boards, and chassis. May check functioning of newly installed equipment in aircraft, ships, and structures to evaluate system performance under actual operating conditions. May instruct and supervise other technical personnel.
MECHANICAL ENGINEERING TECHNICIAN
S.O.C. #19-3027
Develops and tests machinery and equipment, applying knowledge of mechanical engineering technology, under direction of engineering and scientific staff: Reviews project instructions and blueprints to ascertain test specifications, procedures, objectives, test equipment, nature of technical problem, and possible solutions, such as part redesign, substitution of material or parts, or rearrangement of parts or subassemblies.Drafts detail drawing or sketch for drafting room completion or to request parts fabrication by machine, sheet metal or wood shops. Devises, fabricates, and assembles new or modified mechanical components or assemblies for products, such as industrial equipment and machinery, power equipment, servosystems, machine tools, and measuring instruments. Sets up and conducts tests of complete units and components under operational conditions to investigate design proposals for improving equipment performance or other factors, or to obtain data for development, standardization, and quality control. Analyzes indicated and calculated test results in relation to design or rated specifications and test objectives and modifies or adjusts equipment to meet specifications. Records test procedures and results, numerical and graphical data, and recommendations for changes in product or test method.

ROBOTICS TECHNICIAN
S.O.C. #17-3024
Installs, programs, and repairs robots and related equipment, such as programmable controllers, robot controllers, end-of-arm tools, conveyors, and parts orienteers, applying knowledge of electronics, electrical circuits, mechanics, pneumatics, hydraulics, and programming, using power tools, hand tools, and testing instruments and following manuals, schematic diagrams, and blueprints: Reviews work order and related manuals, blueprints, and schematic diagrams to determine tasks to be performed and tools, equipment, and parts needed for installation or repair assignment. Discusses assignment with customer’s representative and inspects installation site to verify that electrical supply wires, conduit, switches, and circuit breakers are installed according to specifications. Positions and secures robot and related equipment to floor, assisted by customer’s staff, using crane, hand tools, and power tools and following manuals and blueprints, or inspects installation site to ensure that robot has been installed according to specifications. Attaches electrical wires to robot controller and programmable controller and connects cables between robot, robot controller, programmable controller, and hydraulic power unit, using hand tools. Connects hoses between hydraulic power unit and robot, using hand tools. Verifies that electrical power is reaching robot and that voltage is as specified, using testing instruments. Pushes buttons, flips switches, and moves levers to start robot and related equipment to verify that operation is as specified. Programs robot to perform specified tasks, applying knowledge of programming language, using teach pendant and keyboard or control panel on robot controller. Modifies program to refine movement of robot, using teach pendant. Observes and listens to robot and related equipment to detect malfunction and repairs or replaces defective parts, using hand tools and power tools. Tests electrical components, such as wiring, switches, and relays, using testing instruments, and replaces faulty components, using hand tools. Locates and replaces faulty printed circuit boards in robot controller, applying knowledge of circuit board function, using computer display screen on robot controller and following schematic diagram. May train customer’s staff in operation of robot and related equipment. May install electric or pneumatic end-of-arm tools on robot. May repair faulty printed circuit boards.
### MATH, LANGUAGE AND REASONING LEVELS

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>17-2199</td>
<td>Applications Engineer</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M2</td>
<td>4-6</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>49-2094</td>
<td>Electronics Technician</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>17-3026</td>
<td>Industrial Engineering</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
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<tr>
<td>17-3027</td>
<td>Mechanical Engineering Technician</td>
<td>R5</td>
<td>Col 1-2</td>
<td>M1</td>
<td>4-6</td>
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<td>17-3024</td>
<td>Robotics Technician</td>
<td>R42</td>
<td>9-12</td>
<td>R2</td>
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</table>

**Prerequisites:**
- Algebra I and II, College prep science with a lab. Students are required to have a “C” or better in these classes.
- High School GPA of 2.5 or higher required.
- Eligible for acceptance into a post-secondary school
- No disciplinary issues at the participating high school

**JOB TITLES/OCCUPATIONS**
- Automation Engineer
- Automation Specialist
- Controls Engineer
- CNC Machine Operator
- Machinist
- Mechatronics Technician
- Robotics Technician

**Minimum Time Requirements**
The Robotics and Advanced Manufacturing program will consist of a two-year sequence with a minimum of 720 instructional hours.

**Educational Resources:**
Textbook: *Introduction to Mechatronics*
Publisher: Premier Books

Textbook: *Materials for Engineers and Technicians*
Publisher: Routledge Publishing

**Potential Equipment needed for Start Up**
- CAD/CAM Software
- Hydraulic Training System
- PLC Training System
- Green Energy Training System
- Hand tools-micrometers, dial calipers, telescoping gauges, digital multimeter, resistors,
- Electrical panel boards, switchboards, ground faulty devices, oscillators
- Circuit Simulation Software
- Robotics Training System
- CNC system
EVALUATION CRITERIA
NOCTI Test # and Description with major topics

Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.

Test: Electro mechanical Engineering Technology PA
Test Code: 8094

Areas Covered on NOCTI exam:
- Technical Documentation and Safety
- Industrial Motor Controls
- Fundamentals of Electricity
- National Electric Code (NEC) Reference Book
- Motors and Transformers
- Electronic Fundamentals
- Programmable Logic Controllers (PLCs)
- Mechanical Power Transmission Systems
- Fluid Power Systems
- Automated Manufacturing Systems

CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Advanced Manufacturing.

EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Potential Certifications earned at EASTERN:

- **FANUC Robotic Certification**
  FANUC’s CERT program trains students how to use the latest robotic automation while applying science, technology, engineering, and math. These programs significantly enhance student learning and provide training for real-world applications with real-world industrial robots. Students receive an industry recognized certification upon course completion.

- **Student Electronics Technician (SET)**
  The Student Electronics Technician (SET) Certification allows high school students and entry-level technicians the opportunity to earn a basic beginner’s certification and creates an opportunity to continue on a career pathway within the high-demand electronics industry.

- **OHSA Certification**
  This training program is intended to provide entry level workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid, and prevent job related hazards. The training covers a variety of safety and health hazards which a worker may encounter. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards.

- **Industrial Electronics (IND)**
  Industrial journeyman-level electronics technicians are expected to obtain knowledge of industrial electronics basic concepts, which are then applicable to all the various specialty areas of industry. Industrial Electronics Technicians must be knowledgeable and have abilities in the following technical and human relations areas: amplifiers, optical wiring, block diagrams-schematics, power supplies, test equipment-tools, mathematics, computers-digital concepts, safety, satellite-wireless-data, communications, cabling, troubleshooting, motors, programmable logic controllers, and software.
Recommended Scope and Sequence - SECONDARY SCHOOL

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
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</thead>
<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
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<td>Safety</td>
<td>Safety</td>
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<td>Teamwork</td>
<td>Teamwork</td>
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<td></td>
<td></td>
<td>Knowledge, ethics, problem solving in Engineering</td>
<td>Manufacturing and Industrial Mechanisms</td>
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<tr>
<td></td>
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<td></td>
<td>Teamwork</td>
<td>TQM Concepts</td>
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<td>Basic Machine Tools</td>
<td>Project Management</td>
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<td>Blueprints and Schematics</td>
<td>Manufacturing Processes</td>
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<td>Engineering Design Process (CAD)</td>
<td>Computer Assisted Manufacturing</td>
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<td>Basic Electricity and Electronics</td>
<td>Machine Controls and Automated Systems (PLC)</td>
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<td>CNC and Welding Principals</td>
<td>Robotics</td>
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<td>Pneumatic Controls</td>
<td>Fluid Power Systems</td>
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<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
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<tr>
<td><strong>MATH</strong></td>
<td>Algebra I</td>
<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
</tr>
<tr>
<td><strong>SCIENCE</strong></td>
<td>Earth Science</td>
<td>Human Anatomy</td>
<td>Biology with Lab</td>
<td>Biology with Lab</td>
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<tr>
<td><strong>HUMANITIES</strong></td>
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<tr>
<td><strong>OTHER</strong></td>
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</tbody>
</table>

SAMPLE OF POST-SECONDARY ADVANCED MANUFACTURING OPPORTUNITIES

Pennsylvania State University
Northampton Area Community College
Montgomery County Community College
Drexel University
Lafayette University
University of Pittsburgh
Pennsylvania College of Technology
Lehigh University
ROBOTICS AND AUTOMATED TECHNOLOGY

Career Pathways

START AT EASTERN
Technical Academic Education

DIPLOMA FROM PARTICIPATING HIGH SCHOOL

EASTERN CERTIFICATE OF COMPLETION

CAREER OBJECTIVES:
• Mechanical Engineer
• Industrial Machinery Mechanic
• Electro-Mechanical Technician

INDUSTRY CERTIFICATE
• OSHA
• AMIST Level 1

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Montgomery County Community College

ASSOCIATE DEGREE PROGRAMS THAT ALIGN:
• Mechatronics Engineering Technology-Associates in Applied Science
• Mechatronics-Applied Engineering Degree

BACHELOR DEGREE PROGRAMS THAT ALIGN:
• Bachelor of Science Mechanical Engineering: PSU, Widener Univ.
• Bachelors Mechatronic Engineering: Cal U

MASTERS DEGREE PROGRAMS THAT ALIGN:
• Master of Science Robotics: Univ. of Michigan
• Master of Science Mechanical Engineering: MIT

ENTER WORKFORCE AS
ENTRY-LEVEL ENGINEERING TECHNICIAN
Pharmaceuticals
Automated Warehousing

ENTRY-LEVEL APPRENTICE IN MANUFACTURING INDUSTRY
Machinery Mechanic
Electronics Assembly

ENGINEER
Manufacturing Engineer
Electrical Engineer
Robotics/Mechanical Engineer
WELDING TECHNOLOGY

PROGRAM DESCRIPTION
An instructional program that prepares individuals to apply technical knowledge and skills in oxyacetylene cutting/burning, gas metal arc welding, flux cored arc welding, shielded metal arc welding, gas tungsten arc welding and plasma cutting. Manual, semi-automatic and automatic welding processes are included in the instruction. Students learn safety practices, mathematics, the types and uses of electrodes and welding rods; properties of metals; blueprint reading; electrical principles; welding symbols and mechanical drawing; use of equipment for testing welds using destructive and non-destructive testing methods; visual examination; use of manuals and specification charts; use of portable grinders and chemical baths for surface cleaning; positioning and clamping; and welding standards established by the American Welding Society, American Society of Mechanical Engineers and American Bureau of Ships.

This course will develop skills in the use of metal shop tools, hand tools, power tools, equipment, materials and foremost; safety. Emphasis will be placed on the development of the necessary skills and knowledge required to function successfully in this industry, including work ethic and employability skills.

WELDING TECHNOLOGY/WELDER Code: 48.0508
An instructional program that prepares individuals to apply technical knowledge and skills in gas, arc, shielded and non-shielded metal arc, brazing, flame cutting and plastic welding. Hand, semi-automatic and automatic welding processes are also included in the instruction. Students learn safety practices and types and uses of electrodes and welding rods; properties of metals; blueprint reading; electrical principles; welding symbols and mechanical drawing; use of equipment for testing welds by ultrasonic methods and destruction and hardness testing; use of manuals and specification charts; use of portable grinders and chemical baths for surface cleaning; positioning and clamping; and welding standards established by the American Welding Society, American Society of Mechanical Engineers and American Bureau of Ships.

Instructor Certification: Vocational-Intern/Instructional 2600
Occupational Competency Area: Welding 2079

Course Objectives
This program prepares the student for success as a:

COMBINATION WELDER
S.O.C. #51-4121
Welds metal components together to fabricate or repair products, such as machine parts, plant equipment, mobile homes, motors, and generators, per layouts, blueprints, or work orders, using brazing and variety of arc and gas welding equipment: Welds metal parts together, using both gas welding or brazing and any combination of arc welding processes. Performs related tasks, such as thermal cutting and grinding. Repairs broken or cracked parts, fills holes, and increases size of metal parts. Positions and clamps together components of fabricated metal products preparatory to welding. May locate and repair cracks in industrial engine cylinder heads, using inspection equipment and gas torch, and be designated Repairer, Cylinder Heads (welding). May perform repairs only and be designated Welder, Repair (welding). May be required to pass employer performance tests or standard tests to meet certification standards of governmental agencies or professional and technical associations.
**WELDING PRODUCTION**

S.O.C. #51-2099
Fabricates and assembles metal products, such as window sashes, casements, doors, awning frames, shells, cases, and tubular products, such as golf carts or furniture, as specified by work orders, diagrams, and templates, using hand tools, power tools, and metalworking machinery: Lays out and marks reference points onto components, using template, rule, square, compass, and scale. Operates machines, such as shears, cutoff saws, brakes, punch press, form roll and drill press, to cut and shape components to specified dimensions. Fits and assembles components, using fixtures, hand tools, power tools, and portable power tools, such as grinders, drills, power wrenches, and riveters. Operates machines, such as arbor presses, riveting press, brazing machine, and resistance-welding machines, to complete assembly. May weld components together.

**MATH, LANGUAGE AND REASONING LEVELS**

<table>
<thead>
<tr>
<th>S.O.C. Code</th>
<th>CAREER OBJECTIVE</th>
<th>Reasoning Level</th>
<th>Grade Level</th>
<th>Math Level</th>
<th>Grade Level</th>
<th>Language Level</th>
<th>Grade Level</th>
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<tbody>
<tr>
<td>51-4121</td>
<td>Combination Welder</td>
<td>R4</td>
<td>9-12</td>
<td>M3</td>
<td>7-8</td>
<td>L3</td>
<td>7-8</td>
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<tr>
<td>51-2099</td>
<td>Welder/Fabricator</td>
<td>R3</td>
<td>7-8</td>
<td>M2</td>
<td>4-6</td>
<td>L2</td>
<td>4-6</td>
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**Minimum Time Requirements**
The Welding Technology program will consist of a two-year sequence with a minimum of 720 instructional hours.

**Educational Resources:**
Textbook: *Welding: Principles and Applications*
Publisher: Cengage Publishing
Textbook: *Welding and Metal Fabrication*
Publisher: Cengage Publishing
Textbook: *Welding Print Reading*
Publisher: Goodhart-Wilcox Company, Inc.
Textbook: *Math for Welders*
Publisher: Goodhart-Wilcox Company, Inc.

**Areas Covered on NOCTI exam:**
- Safety
- Welding Symbols and Blueprint Reading
- Oxyfuel Cutting (OFC)
- Arc Cutting Process
- Physical Characteristics and Mechanical Properties of Metals
- Weld Fit-Up and Quality
- Shielded Metal Arc Welding (SMAW)
- Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)
- Gas Tungsten Arc Welding (GTAW)

**EVALUATION CRITERIA**

**NOCTI Test # and Description with major topics**
Students are expected to perform on the National Occupational Career Testing Institute (NOCTI) end of program assessment at the Advanced and/or Competent Level.
Test: Welding
Test Code: 4172
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**Recommended Scope and Sequence - SECONDARY SCHOOL**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
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</thead>
<tbody>
<tr>
<td><strong>TECHNICAL</strong></td>
<td></td>
<td></td>
<td>Safety, Mathematics, Oxyacetylene, Gas Metal Arc Welding, Flux Cored Arc Welding, Plasma Cutting, Grinding</td>
<td>Shielded Metal Arc Welding, Gas Tungsten Arc Welding, Blueprint Reading, Metallurgy</td>
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<tr>
<td><strong>ENGLISH</strong></td>
<td>College Prep English I</td>
<td>College Prep English II</td>
<td>College Prep English III</td>
<td>College Prep English IV</td>
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<tr>
<td><strong>MATH</strong></td>
<td>Algebra I</td>
<td>Geometry</td>
<td>Algebra II</td>
<td>Advanced Math</td>
</tr>
<tr>
<td><strong>SCIENCE</strong></td>
<td>Biology</td>
<td>Chemistry</td>
<td>Physics</td>
<td></td>
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<tr>
<td><strong>HUMANITIES</strong></td>
<td>Civics</td>
<td>US History</td>
<td>World History</td>
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<tr>
<td><strong>OTHER</strong></td>
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**CERTIFICATIONS OFFERED/REQUIRED – INDUSTRY AND OTHER**

An EASTERN certificate of completion will be issued to all students who earn a 70% or greater and complete all competencies designated for Welding Technology. EASTERN will warrant that a student can successfully perform the tasks and performance objectives specified on the student’s Competency Transcript. The warrant will be in effect for up to one year following a student’s completion of the program. Student must be a program completer.

Potential Certifications earned at EASTERN:

- **OSHA 10 Certification**
  This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction safety and health hazards which a worker may encounter at a construction site. Training should emphasize hazard identification, avoidance, control and prevention, not OSHA standards.

- **S/P2 Welding Certification**
  The S/P2 Welding course educates students on the potential hazards and pitfalls specific to the practice of welding. This includes Safety Data Sheets, personal protective equipment (PPE), equipment safety, health hazards, etc.

Training gives the student awareness that they need in order to recognize the hazards around them, as well as providing training on skills that are desirable to employers, such as building a resume, interview skills, ethics in the workplace and employable attitudes.

- **D1.1 Certification**
  Eastern Center for Arts and Technology is an American Welding Society (AWS) certified Remote Testing Facility (RTF) through a partnership with the Welding Training and Testing Institute (WTTI). Students can take a qualification test under the AWS D1.1 Structural Steel Code. This certification is optional.

**POST-SECONDARY OPPORTUNITIES**

Penn College of Technology  
Bucks County Community College  
Montgomery County Community College  
Thaddeus Stevens College of Technology

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EASTERN GRADING POLICY

- Work Ethic: 34% (Daily Grade, responsibility, safety)
- Theoretical: 33% (Tests, quizzes, homework)
- Application: 33% (Projects, labs, hands on)

PENNSYLVANIA CORE STANDARDS

Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

- CC 3.5.9-10.B Determine the central ideas or conclusion of a text etc.
- CC 3.5.9-10.B Follow precisely a multistep procedure etc.
- CC 3.5.11-12.D Determine the meaning of symbols, key terms, and other specific words

Pennsylvania Core Standards for Mathematics Standard 2.1

- CC 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.
- CC 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.
- CC 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

- CC 3.6.9-10.B Writing: Write informative or explanatory texts, including the narrative of technical processes, etc.

Pennsylvania Academic Standards for Career Education and Work

- 13.1 Career Awareness and Preparation
- 13.2 Career Acquisition (Getting a Job)
- 13.3 Career Retention and Advancement
- 13.4 Entrepreneurship

It is the policy of the Eastern Center for Arts and Technology not to discriminate on the basis of race, sex, color, religion, age, disability, sexual orientation, or national origin in its career and technical programs, activities or employment as required by Title VI, IX, Section 504, and the Americans with Disabilities Act. EASTERN provides equal access to the Boy Scouts and other designated youth groups. EASTERN will take steps to assure that lack of English language skills will not be a barrier to admission and participation in its career and technical programs. Further assurance is given that services, activities and facilities are accessible to and usable by persons with handicaps. The following person has been designated to handle inquiries regarding the non-discrimination policies: Equity Coordinator, 3075 Terwood Road, Willow Grove, PA 19090. 215-784-4800.