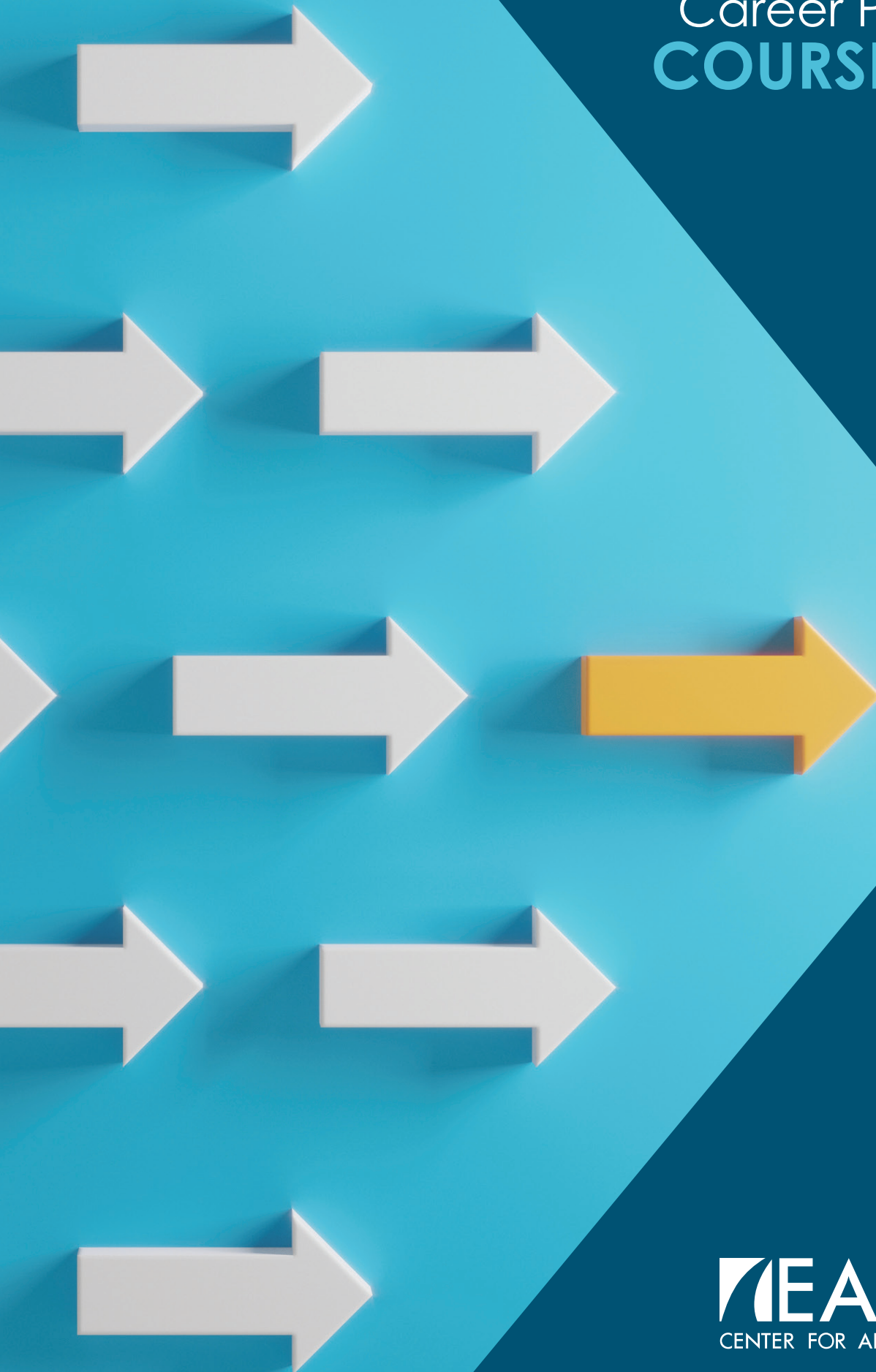


# Career Pathways **COURSE GUIDE**



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](mailto:JGreb@eastech.org)

#### **QUESTIONS ABOUT THE ENROLLMENT PROCESS?**

Contact our Supervisor of Career and Technical Education Office

[Ecollins@eastech.org](mailto: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](mailto:HGranacher@eastech.org)

#### **QUESTIONS ABOUT PROGRAM RECRUITMENT OR PROGRAM TOURS?**

Contact Mrs. Amy Shields, EASTERN's Marketing and Recruitment Coordinator

[AShields@eastech.org](mailto: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](mailto:CPlesnarski@eastech.org)

# Career Pathways COURSE GUIDE



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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

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Start Your  
**CAREER PATH**  
Today at EASTERN





# 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.

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## 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, lay out 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.

### 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 arranges 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 according to 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 particular 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.

### 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 arranges 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.

## MATH, LANGUAGE AND REASONING LEVELS



S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
27-1013	<b>Commercial Illustration</b>	R5	Col 1-2	M2	4-6	L4	9-12
27-1024	<b>Graphic Design</b>	R5	Col 1-2	M3	7-8	L4	9-12
43-9031	<b>Digital Imaging Design</b>	R5	Col 1-2	M3	7-8	L4	9-12

**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

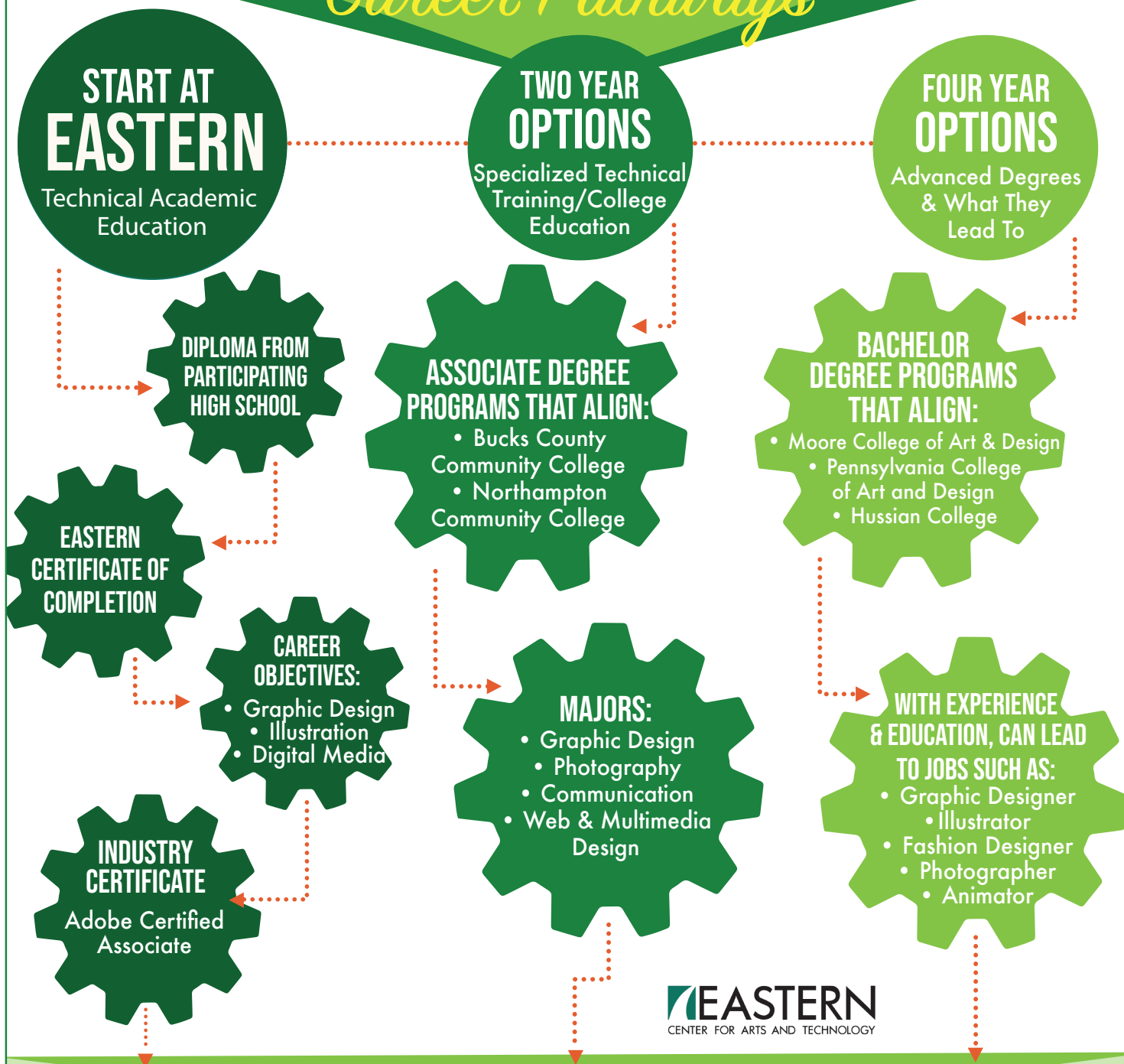
Drexel University  
 Hussian School of Art  
 Indiana University of Pennsylvania  
 Johnson & Wales University  
 Kutztown University  
 Montgomery County Community College  
 Moore College of Art and Design  
 Penn State University  
 Pennsylvania College of Art and Design  
 Pennsylvania College of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

## Recommended Scope and Sequence - SECONDARY SCHOOL

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

# COMMERCIAL ART

## *Career Pathways*



### ENTER WORKFORCE AS

#### PRINT PRODUCTION

Tyler School of Art  
Hussian College



**GRAPHIC ARTIST | PACKAGE DESIGNER |  
ILLUSTRATOR | WEB DESIGNER**

Allebach Communications  
Boggs Printing, Inc.

#### GRAPHIC DESIGNER | ART DIRECTOR | MEDICAL ILLUSTRATOR

Iris Creative Group  
Fastsigns



# 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.

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## 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

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## Course Objectives

This program prepares the student for success as a:

### COSMETOLOGIST

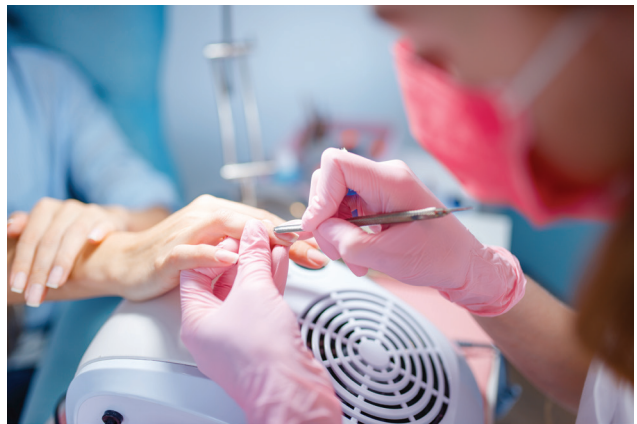
#### S.O.C. #39-5012

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. Cleans, shapes, and polishes fingernails and toenails.

### 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
39-5012	Cosmetologist	R4	9-12	M3	7-8	L4	7-8
39-5092	Nail/Salon Technician	R2	4-6	M1	0-3	L4	4-6



**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

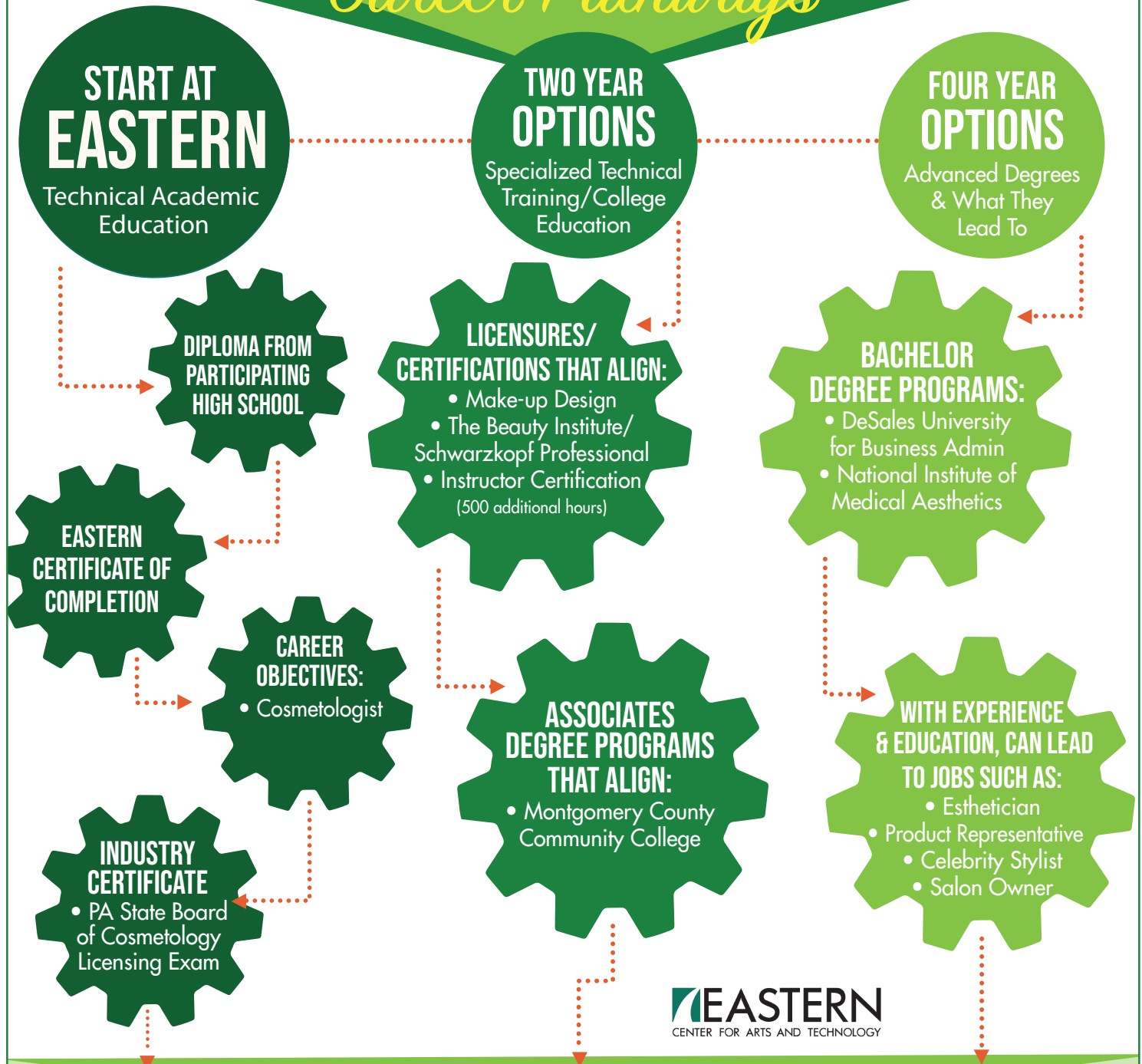
Bucks County School of Beauty Culture

**Recommended Scope and Sequence - SECONDARY SCHOOL**

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Hair Coloring and Lightening Shaping Hair Styling and Fitting Wigs and Hair Pieces Permanent Waving Shampooing	Facial/Massages Make-up Chemical Relaxers and Soft Curl Services Thermal Straighten Hair Conditions Hair and Scalp Operating a Salon Hair Styling Manicure
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

# COSMETOLOGY

## *Career Pathways*



### 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 Papillion 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.



### PREP COOK

**S.O.C. #35-3021**

Performs duties which combine preparing and serving food and non-alcoholic beverages.



### CHEF

**S.O.C. #35-1011**

Supervises, coordinates, and participates in activities of cooks and other kitchen personnel engaged in preparing and cooking foods in hotel, restaurant, cafeteria, or other establishment: Estimates food consumption, and requisitions or purchases foodstuffs. Receives and examines foodstuffs and supplies to ensure quality and quantity meet established standards and specifications. Selects and develops recipes based on type of food to be prepared and applying personal knowledge and

experience in food preparation. Supervises personnel engaged in preparing, cooking, and serving meats, sauces, vegetables, soups, and other foods. Cooks or otherwise prepares food according to recipe. Cuts, trims, and bones meats and poultry for cooking. Portions cooked foods or gives instructions to workers as to size of portions and methods of garnishing. Carves meats. May employ, train, and discharge workers. May maintain time and payroll records. May plan menus. May supervise kitchen staff, plan menus, purchase foodstuffs, and not prepare and cook foods. May be designated according to cuisine specialty as Chef, French; Chef, German; Chef, Italian; or according to food specialty as Chef, Broiler or Fry; Chef, Saucier. May supervise worker preparing food for banquet and be designated Banquet Chef.

#### 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
35-3021	Prep Cook	R3	7-8	M3	7-8	L3	7-8
35-1011	Chef	R4	9-12	M3	7-8	L3	7-8
35-1011	Cook Apprentice	R3	7-8	M3	7-8	L3	7-8



- 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

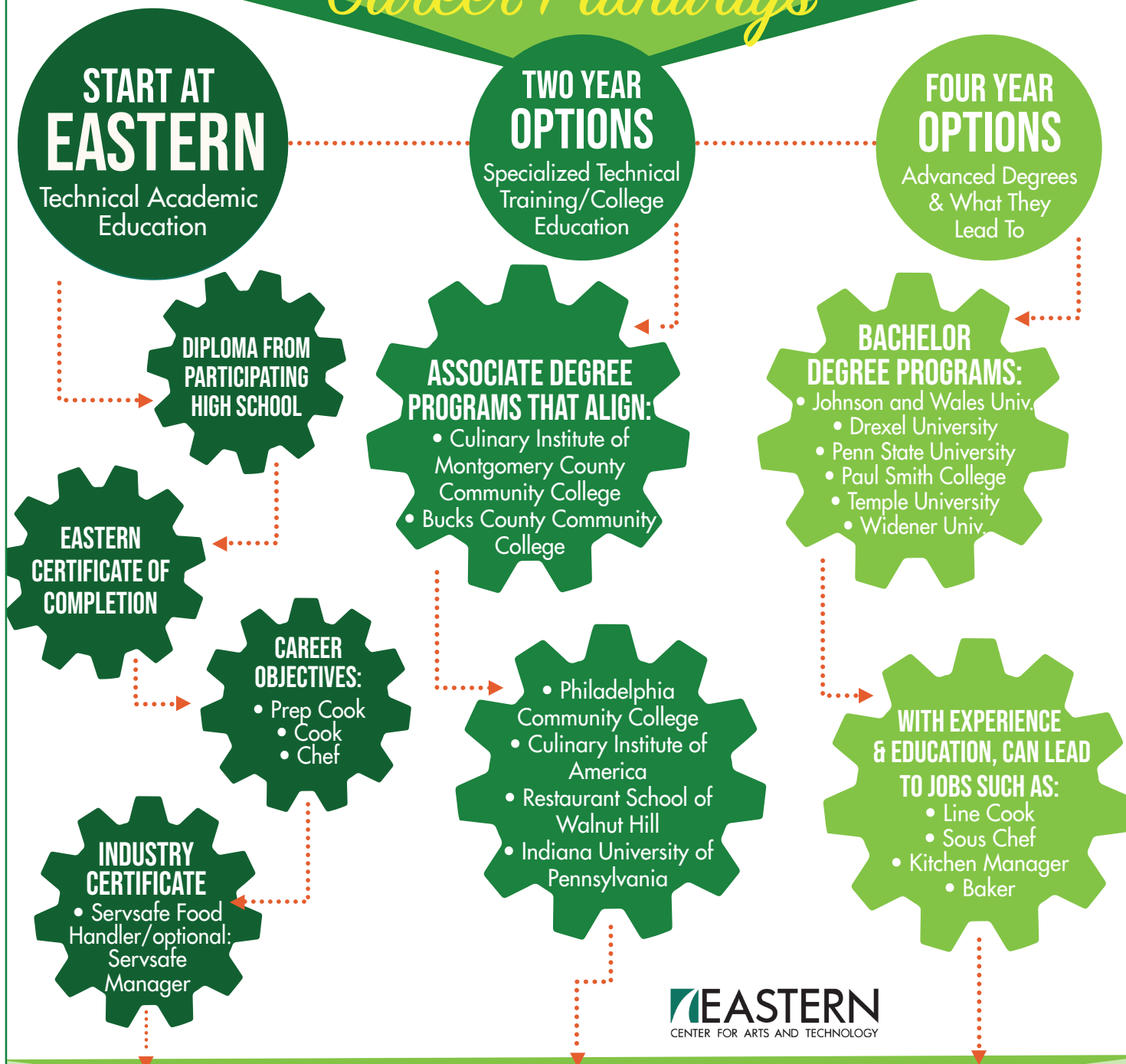
Penn College of Technology  
Culinary Institute of America  
Johnson and Wales University  
Bucks County Community College  
Montgomery County Community College  
The Restaurant School  
Indiana University of Pennsylvania  
Drexel University  
Temple University  
Philadelphia Community College

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Kitchen and Personal Cleanliness and Hygiene Food Preparation Food Inventory Prep. and Use of Food Service Tools & Equipment Commercial Baking	Food Service Production Costing Out Menus Nutrition Hospitality and Customer Service Supervisory Skills
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

# CULINARY ARTS

## *Career Pathways*



### ENTER WORKFORCE AS

#### 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



# BUSINESS AND TECHNOLOGY PROFESSIONAL



## 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 basic and advanced skills needed in a business environment.

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.

## PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

### ADMINISTRATIVE ASSISTANT AND SECRETARIAL SCIENCE, GENERAL Code: 52.0401

The administrative assistant/secretarial science program is designed to prepare students to perform the duties of administrative assistants and/or secretaries and related occupations. Students compose, key, format and process documents (correspondence, reports, tabulations and forms); compile, proofread, edit and correct documents; operate dictation/transcription equipment and computers; use word processing, spreadsheet, database, desktop publishing, presentation and communication software; receive, distribute and sort incoming mail; prepare outgoing mail; perform basic mathematical functions; operate office equipment; perform records management duties; communicate with others in person, in writing and by telephone; and perform receptionist duties. Students also receive instruction in business ethics, principles of business law, office procedures, public relations and accounting. Students are provided experiences and instruction needed to satisfy initial employment requirements for administrative assistants and secretaries. Those completing the program may be employed as administrative assistants or specialists; corresponding, legal, medical, educational and technical secretaries; or in related areas such as general office clerk, clerk-typist, word processors, information clerks and records management clerks.

**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.

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.

### 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



**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**

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
43-6011	<b>Executive Administrative Assistant</b>	R5	COL 1-2	M3	7-8	L5	COL 1-2
43-6014	<b>Administrative Assistant</b>	R4	9-12	M3	7-8	L4	9-12
43-4051	<b>Customer Service Representative</b>	R4	7-8	M2	4-6	L2	4-6

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Orientation Computers and Internet Document Processing Software Business Writing and Communication Spreadsheet Software Office Procedures and Customer Service	Orientation Computers and Internet Banking and Financial Procedures Accounting Business Law and Ethics Databases Presentations Meeting, Event and Travel Planning
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

**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**

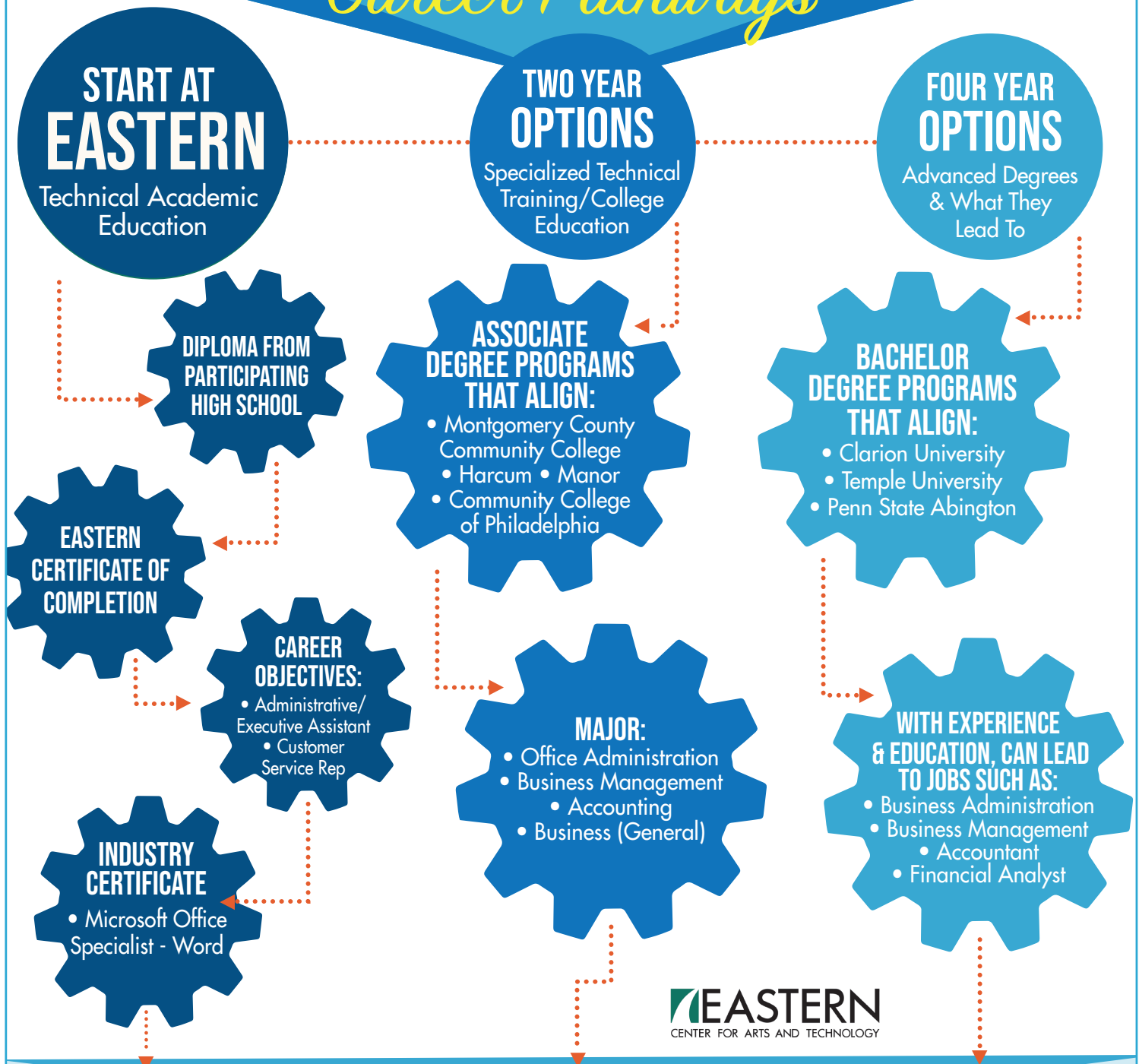
Montgomery Community College offers up to nine transferable credits over two years to students successfully completing their criteria.

**Post-secondary Opportunities**

Montgomery County Community College  
 Lehigh Carbon Community College  
 Northampton Community College  
 Delaware Community College

# BUSINESS & TECHNOLOGY PROFESSIONAL

## *Career Pathways*



### 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



# NETWORKING AND CYBERSECURITY



## 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 in 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**

**Prerequisites:** Strong math background (Algebra II completed or scheduled during the first year)

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
15-1231	<b>Computer Network Support Specialist</b>	R5	Col 1-2	M3	7-8	L5	COL 1-2
15-1142	<b>Network Administrator</b>	R5	Col 1-2	M3	7-8	L5	COL 1-2

**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

**Recommended Scope and Sequence - SECONDARY SCHOOL**

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Updating and Troubleshooting Working with TCP/IP Networking Basics Administering and Configuring a Cisco Routers and Switches Updating and Troubleshooting Hardware	Applications and Introduction Microsoft VISTA Administering and Configuring Linux Securing the Network/Recover, Security, Anti-Virus Administering and Configuring Microsoft Server
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

### 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 +

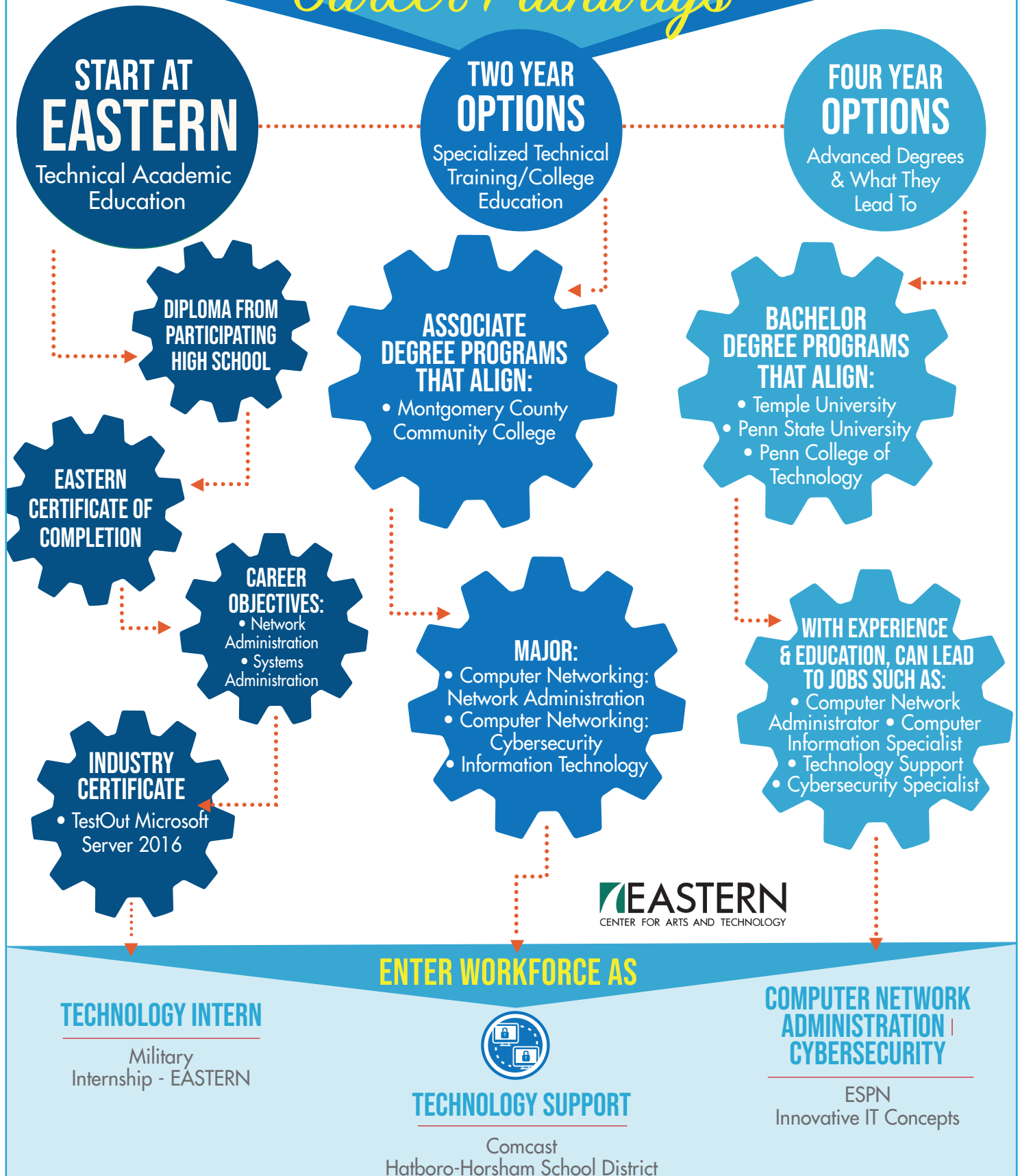
Server+ certified candidates can work in any environment because it is the only vendor-neutral certification covering the major server platforms. It is the only industry certification that covers the latest server technologies including virtualization, security and network-attached storage. This is an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

# NETWORKING AND CYBERSECURITY

## *Career Pathways*





# 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, land navigation, 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
33-3051	Police	R4	9-12	M2	4-6	L3	7-8
33-9032	Security	R3	7-8	M1	0-3	L2	4-6
33-2011	Fire Fighter	R4	9-12	M2	4-6	L3	7-8
29-2042	Emergency Medical Technician	R4	9-12	M3	6-9	L4	9-12

**Prerequisites:** The student must undergo a State Police check to enroll in the program and work in this field.

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Fire Ground Operations Hazardous Materials Emergency Telecommunications Basic First Aid	Law Enforcement Patrol Law Enforcement Arrest Procedures Emergency and Law Enforcement Search Crime Scene Investigation
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

**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:**

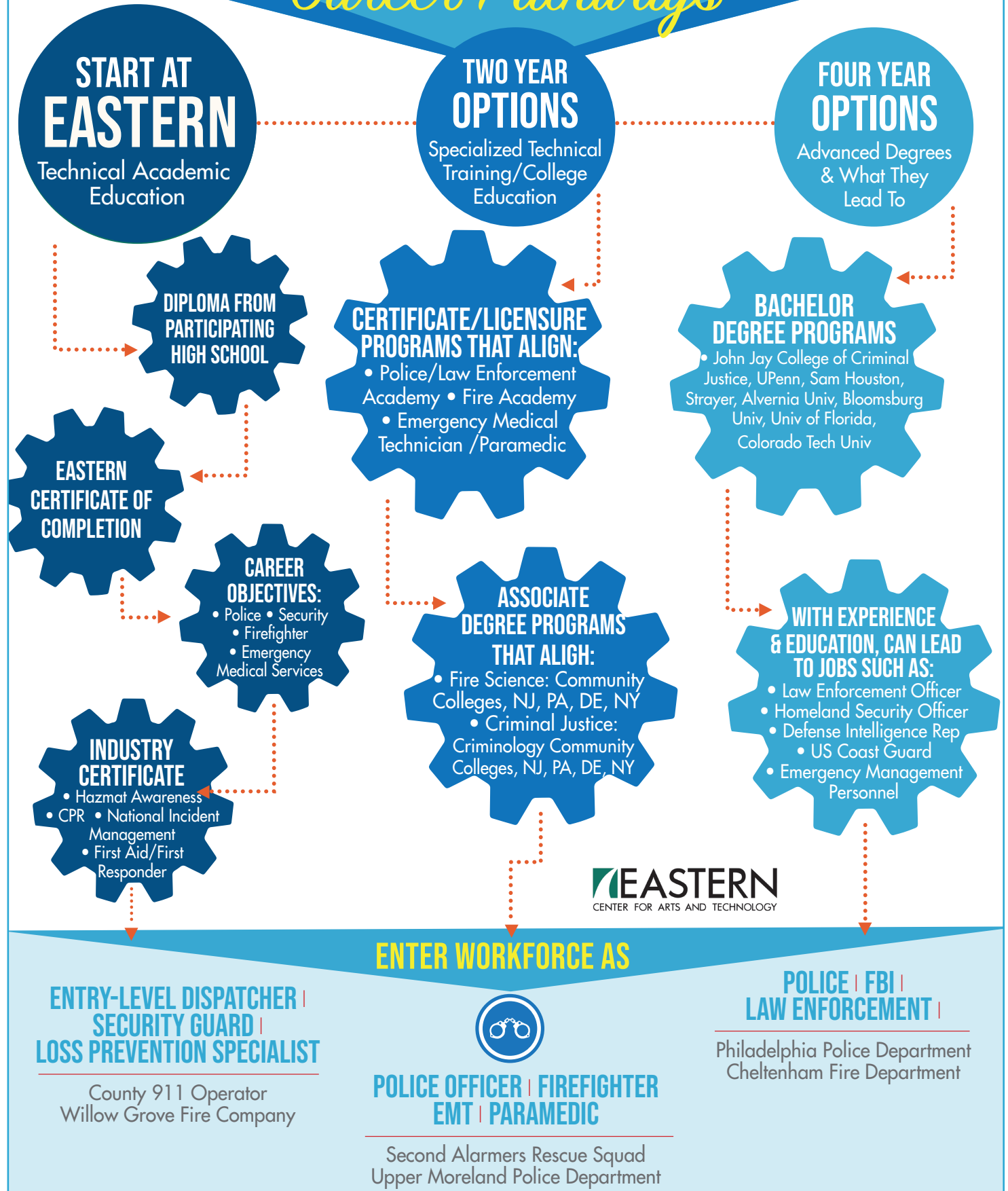
- **Hazardous Materials Awareness**  
Participants will learn how to recognize a hazardous materials release and the risks involved. They will also learn how to identify the released material; how to use available resources, including the Emergency Response Guidebook; and how to notify the proper authorities 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*







# 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 remodels 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
47-3012	Pre-Apprentice	R4	9-12	M3	7-8	L3	7-8
47-2141	Exterior Remodeling and Installation	R4	9-12	M3	7-8	L3	7-8
47-3016	Roofing and Siding Helper	R3	7-8	M1	0-3	L2	4-6

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Planning Jobs Rough Framing Forms Exterior	Doors and Windows Interiors Cabinetry Stairs
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

### 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

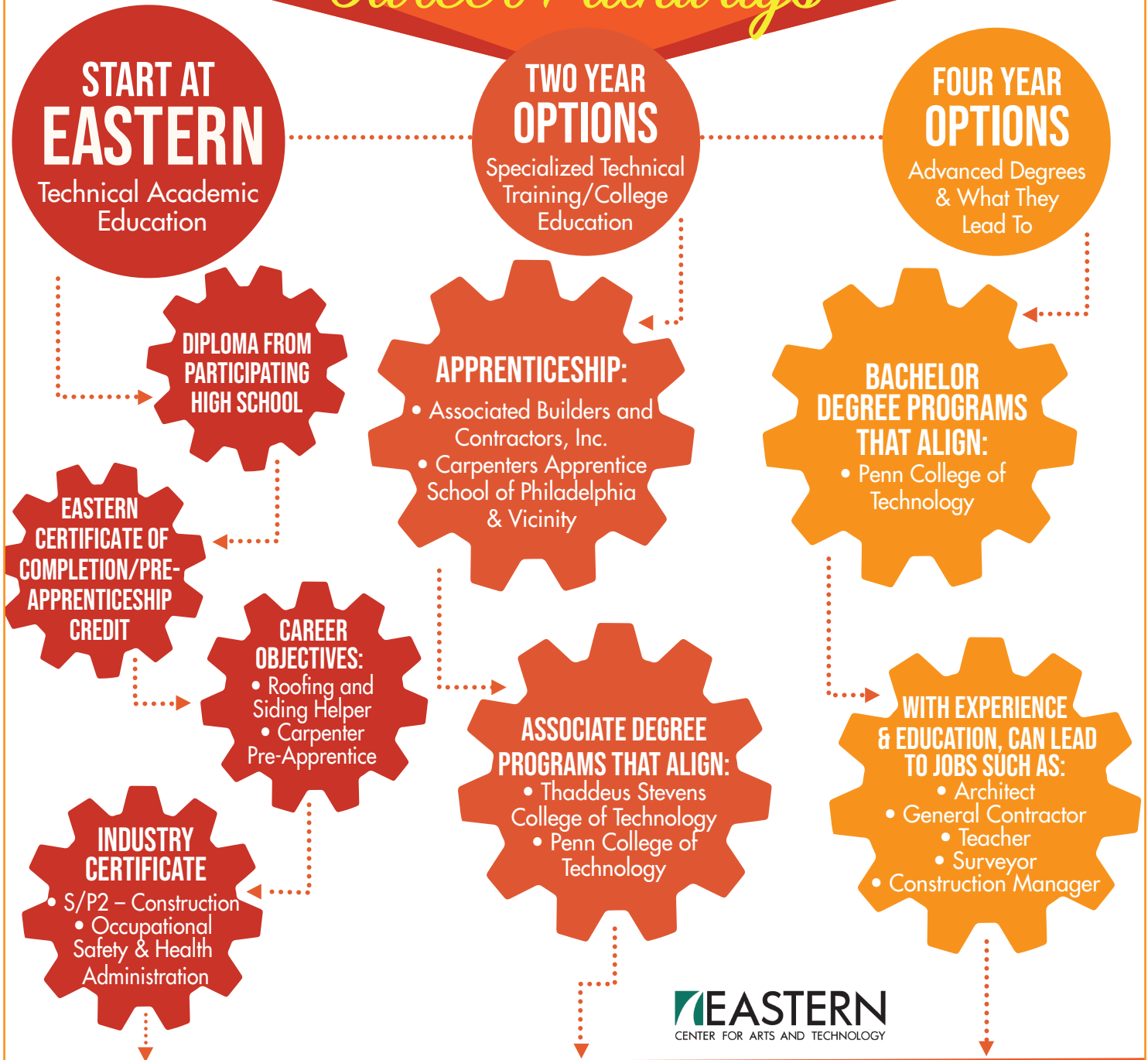
This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction 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

# CONSTRUCTION TECHNOLOGY

## *Career Pathways*



### ENTER WORKFORCE AS

**CONSTRUCTION LABORER |  
CONSTRUCTION  
APPRENTICE | ENTRY-  
LEVEL CARPENTER**

William A. Geppert, Inc.  
AH Adams & Company



**ASSISTANT PROJECT MANAGER |  
CONSTRUCTION SAFETY MANAGER | CARPENTER**

Bades Building & Contractors  
FH Poffarl Building Construction

**PROJECT MANAGER |  
ARCHITECT | GENERAL  
CONTRACTOR**

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 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.

## PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

### **ELECTRICAL AND POWER TRANSMISSION INSTALLERS, OTHER Code: 46.0399**

An instructional program that prepares individuals to apply technical knowledge and skills necessary to install, operate, maintain and repair electrically energized residential, commercial and industrial systems, and DC and AC motors, 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. Reading and interpretation of commercial and residential construction wiring codes and specifications, installation and maintenance of wiring, service and distribution networks within large construction complexes are also critical components of the program.

**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.

## ➤ 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.

## ➤ 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.

## MATH, LANGUAGE AND REASONING LEVELS



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

## 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

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

### 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

### TWO/ FOUR YEAR OPTIONS

Advanced Degrees  
& What They  
Lead To

**DIPLOMA FROM  
PARTICIPATING  
HIGH SCHOOL**

### CERTIFICATE PROGRAMS THAT ALIGN:

- Thaddeus Stevens College of Technology
- Penn College of Technology

### 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

### WITH EXPERIENCE & EDUCATION, CAN LEAD TO JOBS SUCH AS:

- Specialized Systems Technician
- Electrical Engineer
- Teacher
- Project Manager

### INDUSTRY CERTIFICATE

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

**EASTERN**  
CENTER FOR ARTS AND TECHNOLOGY

### ENTER WORKFORCE AS

#### PRE-APPRENTICE | MAINTENANCE HELPER

ADT Commercial  
Orkin Electric Systems  
J.F. Electric, Inc.



#### APPRENTICE WORKING TOWARDS JOURNEYMAN ELECTRICIAN CERTIFICATE

PECO  
Reuter and Hanney, Inc.

#### BUILDING AUTOMATION TECHNICIAN | ENGINEER | PROJECT MANAGER

CM3  
Communication &  
Power Systems, 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
49-9021	HVAC Technician	R4	9-12	M3	7-8	L3	7-8
49-9098	HVAC Helper	R3	7-8	M2	4-6	L2	4-6

### 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 an 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

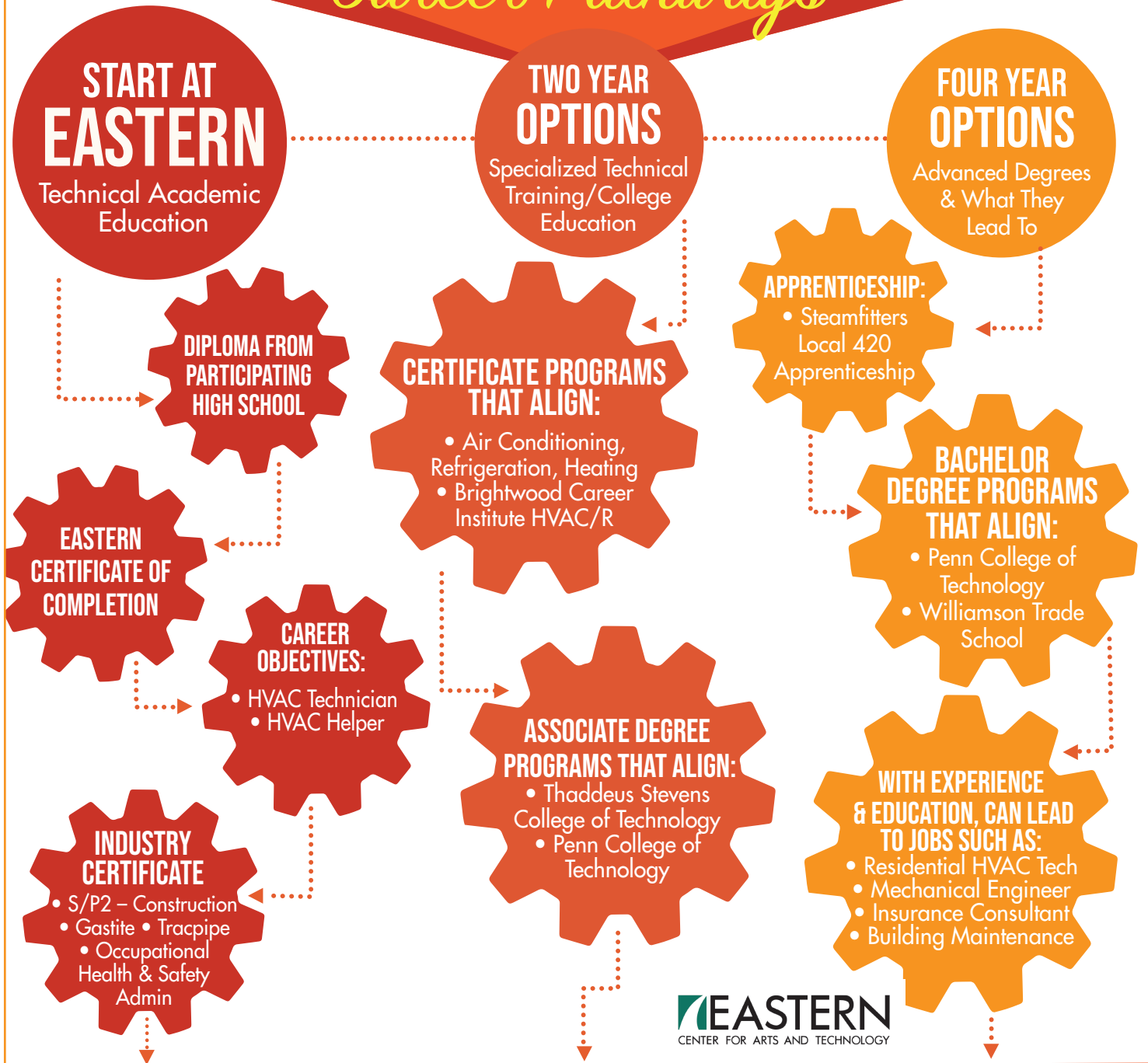
Penn College of Technology

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Electrical Applications Heating and Furnace Systems Ductwork and Air Transfer systems Troubleshooting Piping	Air Conditioning Heating and Furnace Systems Ductwork and Air Transfer Systems Troubleshooting Air and Heat Systems Refrigeration
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	U.S. History	World History	
<b>OTHER</b>	Foreign Language	Foreign Language		

# HEATING, VENTILATION & AIR CONDITIONING

## *Career Pathways*



### ENTER WORKFORCE AS

#### HVAC HELPER

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



#### HVAC HELPER | WORK TOWARD TECHNICIAN

Weinstein Supply  
Philadelphia Owners Association

#### HVAC HELPER | MOVE INTO TECHNICIAN OR SUPERVISOR ROLE

Huntingdon Mechanical  
Rossi Mechanical



# 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 intramuscular 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
31-2021	Physical Therapist	R4	9-12	M3	7-8	L4	9-12
29-2034	Radiology	R5	Col 1-2	M4	9-12	L5	Col 1-2
29-1141	Registered Nurse	R5	Col 1-2	M4	9-12	L5	Col 1-2
29-1126	Respiratory	R4	9-12	M3	7-8	L3	7-8
29-2061	Licensed Practical	R4	9-12	M3	7-8	L4	9-12

### 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.

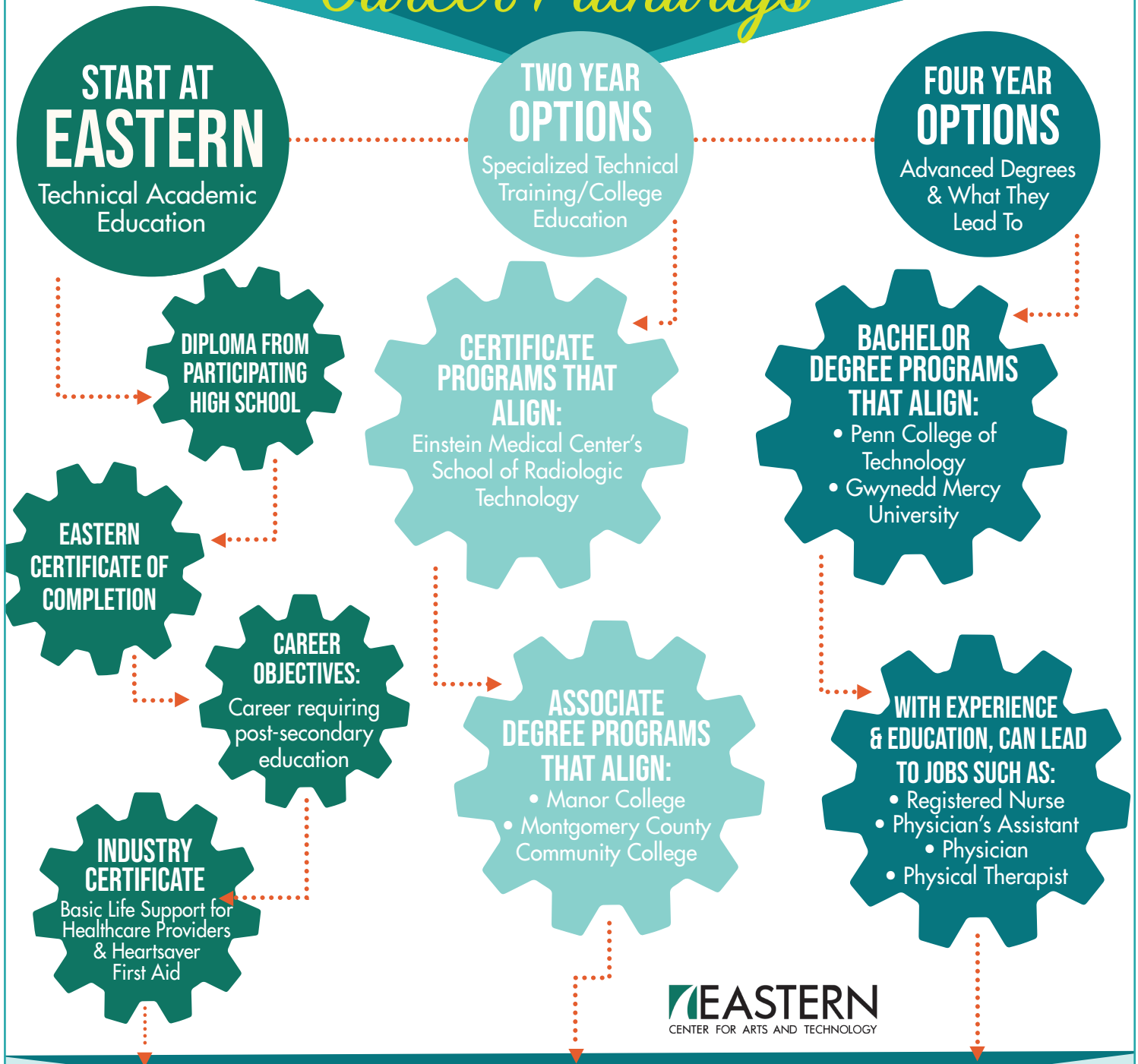
## POST-SECONDARY OPPORTUNITIES

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

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>				Maintaining a clean, safe and healthy environment Providing Personal Care Providing Restorative Care Science with Lab Advanced Math
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Pre- Algebra	Algebra I	Geometry	Advanced Math Algebra II
<b>SCIENCE</b>	Earth Science	Human Anatomy	Biology with Lab	
<b>HUMANITIES</b>				
<b>OTHER</b>				

# ALLIED HEALTH *Career Pathways*



## ENTER WORKFORCE AS

**PATIENT CARE TECHNICIAN  
| MEDICAL OFFICE ADMIN  
ASSISTANT**

Abington-Jefferson Hospital  
Holy Redeemer Hospital



**EMT | LPN | RADIOLOGY TECH | ULTRASOUND  
TECHNICIAN | PHLEBOTOMIST | PARAMEDIC**

Ann's Choice  
Reading Hospital

**REGISTERED NURSE**

Einstein Healthcare Network  
EASTERN's Practical Nursing



# 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.

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## 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

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## 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, perform 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
29-2056	Veterinary Technician	R4	9-12	M3	7-8	L4	9-12
31-9096	Veterinary Assistant	R5	9-12	M3	7-8	L4	9-12

### 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).

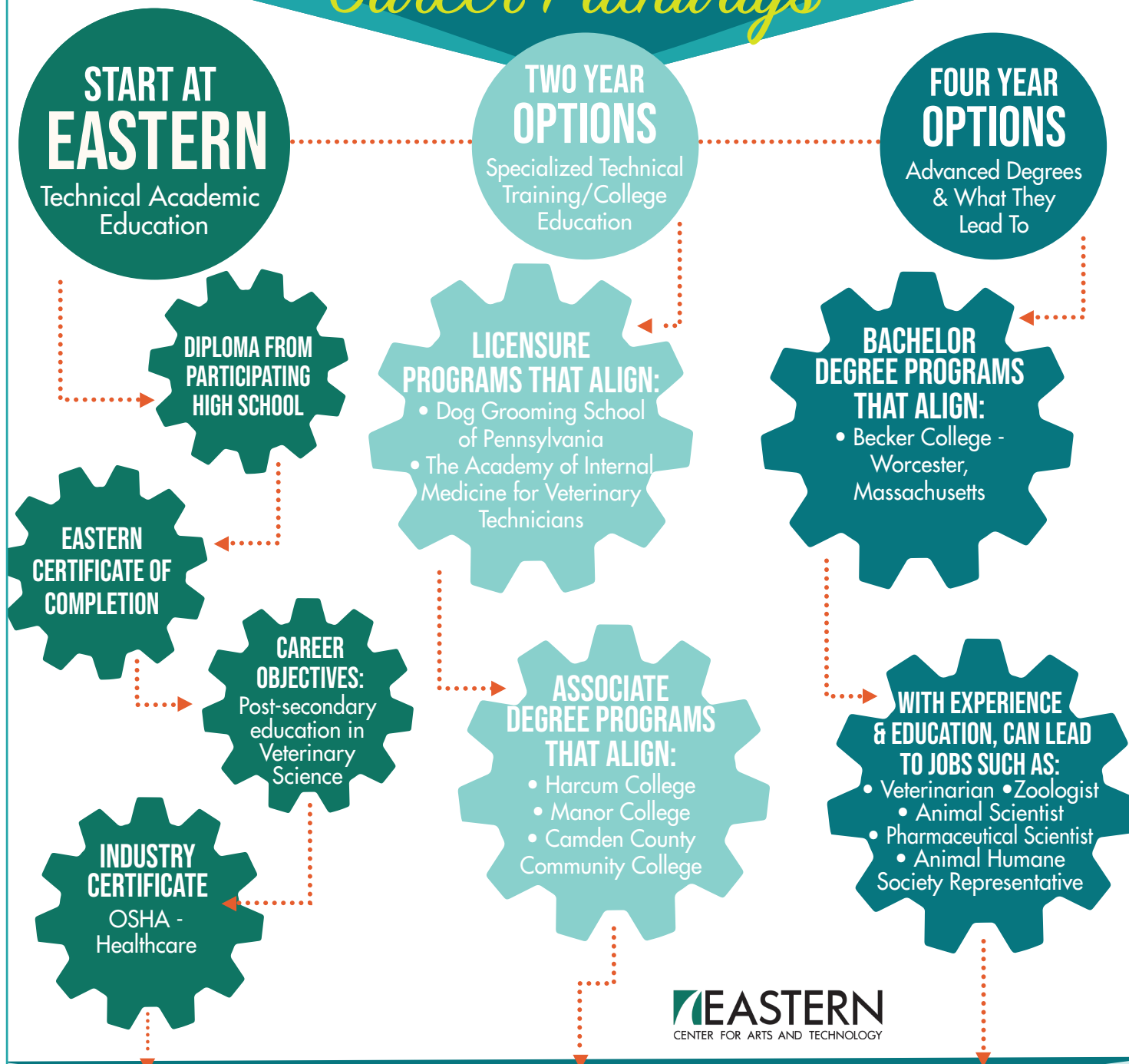
- **Requirements to Certification for Veterinary Technician in Pennsylvania**  
Post-secondary education is a requirement. Initially potential candidates for program admission would minimally need a high school diploma or equivalent. A minimum GPA in high school of 2.0 or better and successful completion 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.

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Safety and Sanitation Animal Care Management Grooming Animal First Aid Health and Disease Control Nutrition	Grooming Genetics and Reproduction Management of Small Animal Related Business Leadership Career Readiness
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Algebra II	Geometry	Advanced Math
<b>SCIENCE</b>	Biology with Lab	Human Anatomy	Chemistry with Lab	Advanced Science
<b>HUMANITIES</b>				
<b>OTHER</b>				

# VETERINARY SCIENCE

## *Career Pathways*



### ENTER WORKFORCE AS

**GROOMER | VET ASSISTANT |  
PET SUPPLY STORE REP |  
KENNEL TECHNICIAN**

Forgotten Cats  
Philadelphia Animal Care &  
Control  
York Road Animal Hospital



**VETERINARY TECHNICIAN |  
LABORATORY ANIMAL TECHNICIAN**

University of Pennsylvania  
Rau Animal Hospital  
Horsham Veterinary Hospital

**ANIMAL SCIENTIST |  
PHARMACEUTICAL SCIENTIST  
| VETERINARY TECHNOLOGIST**

Glaxo SmithKline  
Charles River Laboratories  
Banfield Pet Hospital



# 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
49-3023	Automotive Technician Trainee	R4	9-12	M3	7-8	L3	7-8
49-2023	MLR Auto Technician	R2	4-6	M1	4-6	L2	4-6



## 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 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 is 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**

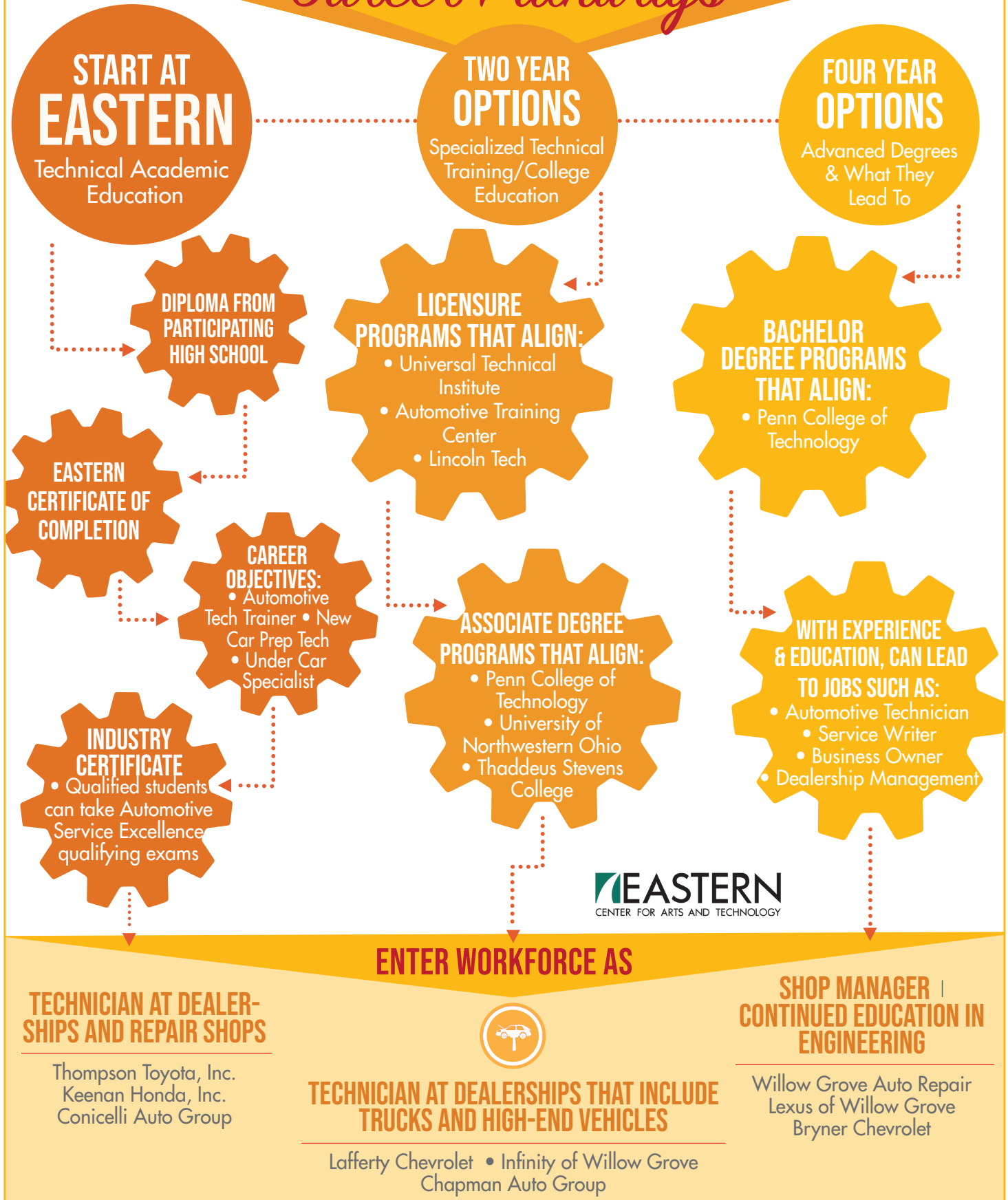
This training program is intended to provide entry level construction workers information about their rights, employer responsibilities, and how to file a complaint as well as how to identify, abate, avoid and prevent job related hazards on a construction site. The training covers a variety of construction 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.

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Brakes Steering and Suspension Electrical Engine Repair Auto and Manual Drivetrain	Manual Drivetrain Automatic Electrical Engine Performance Heating and Air Conditioning
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>				
<b>OTHER</b>				

# AUTOMOTIVE TECHNOLOGY

## *Career Pathways*





# COLLISION REPAIR 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 all collision repairs on motor vehicles. 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 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.

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## 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

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## 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.

### ➤ AUTOMOTIVE REFINISHER HELPER S.O.C. #49-3021


Assists the Automotive Refinisher in all aspects of the career.

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

### ➤ SHEET METAL COSMETIC REPAIR PERSON S.O.C. #51-2041

Body-line finisher; body repairer, bus; dent remover; door repairer, 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.

## MATH, LANGUAGE AND REASONING LEVELS



S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
49-3021	Automotive Refinisher	R3	7-8	M2	4-6	L3	7-8
51-2041	Sheet Metal/Cosmetic Repair	R3	7-8	M3	7-8	L3	7-8
49-3021	Frame/Structural Repair	R3	7-8	M3	7-8	L3	7-8
49-3021	Automotive Refinisher's Helper	R2	7-8	M1	4-6	L1	7-8

**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

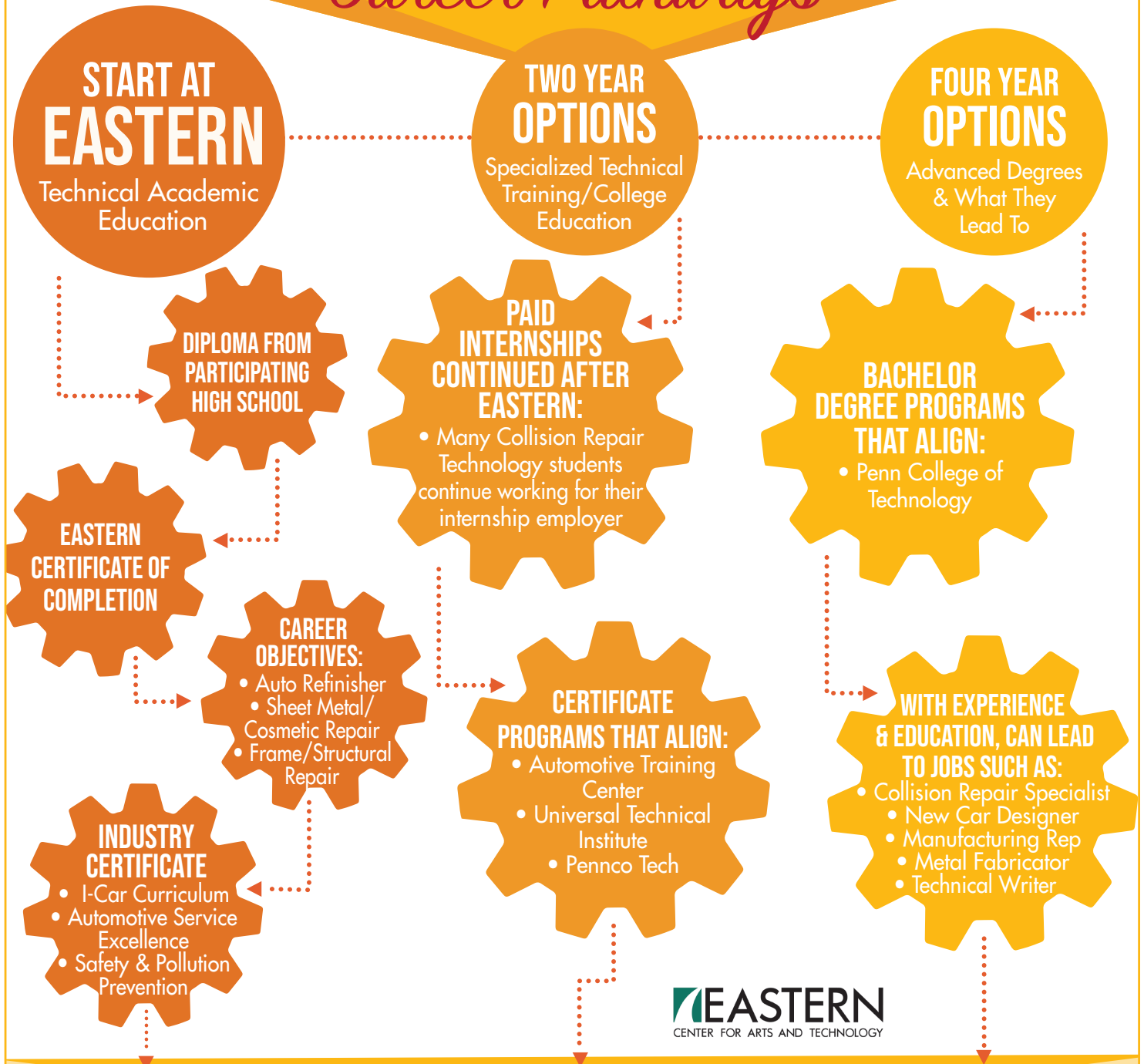
Automotive Training Center  
Penn College of Technology  
Bucks County Community College  
Montgomery County Community College  
Thaddeus Stevens  
Universal Technical Institute  
Ohio Technical College  
DSA Collision Service  
C & C Ford  
Executive Auto Body  
Caliber Collision  
Marty Sussman Honda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

## Recommended Scope and Sequence - SECONDARY SCHOOL

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

# COLLISION REPAIR TECHNOLOGY

## *Career Pathways*



### ENTER WORKFORCE AS

#### ENTRY LEVEL COLLISION TECHNICIAN | PAINT TECHNICIAN

Executive Auto Body  
Marty Sussman Honda  
DSA Collision Service



#### COLLISION REPAIR TECHNICIAN | PAINT TECHNICIAN

Mondello's Autobody  
Prestige Autobody • Faulkner Collision

#### COLLISION SHOP MANAGER | AUTO BODY ESTIMATOR

JD's Auto Repair  
North Penn Collision  
Precision Collision



# ROBOTICS AND AUTOMATED TECHNOLOGY



## PROGRAM DESCRIPTION

The Robotics and Automated Technology Program is designed for college preparatory high school students who are interested in pursuing an engineering career following high school. This program will teach introductory skills in order to be successful in the manufacturing industry. An understanding of topics in Mechanics, Electronics, Computers, Assembly Language and Robot Programming, Control, and Robotics are fundamental to this program.

## PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

### 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 orienters, 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 of 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
17-2199	<b>Applications Engineer</b>	R5	Col 1-2	M2	4-6	L3	7-8
49-2094	<b>Electronics Technician</b>	R5	Col 1-2	M3	7-8	L3	7-8
17-3026	<b>Industrial Engineering</b>	R5	Col 1-2	M3	7-8	L3	7-8
17-3027	<b>Mechanical Engineering Technician</b>	R5	Col 1-2	M1	4-6	L1	7-8
17-3024	<b>Robotics Technician</b>	R42	9-12	R2	R2	R2	R2

**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.
- **OSHA 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

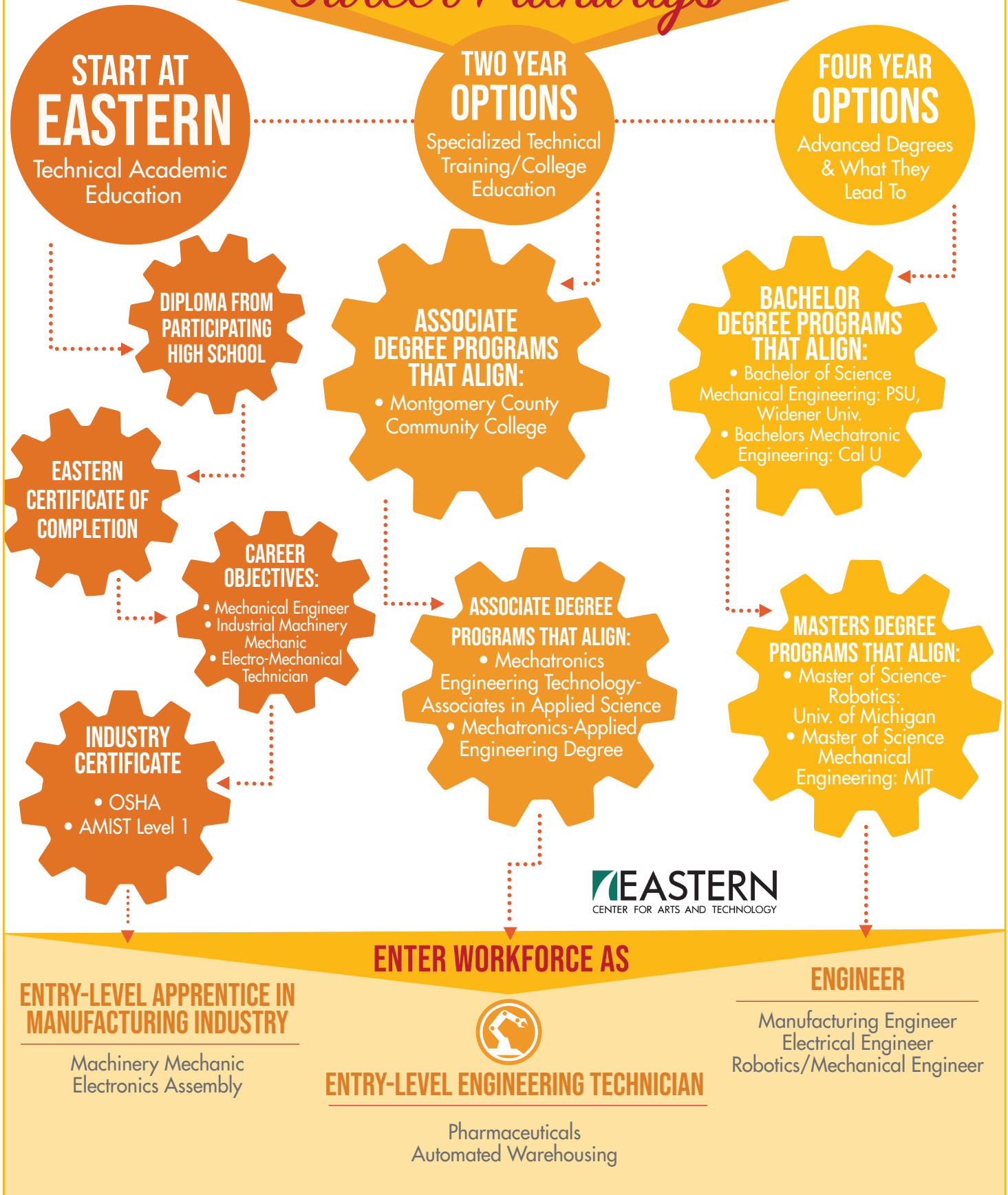
Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Safety Knowledge, ethics, problem solving in Engineering Teamwork Basic Machine Tools Blueprints and Schematics Engineering Design Process (CAD) Basic Electricity and Electronics CNC and Welding Principals Pneumatic Controls	Safety Teamwork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

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*





# 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.

## PENNSYLVANIA CIP CODE AND CERTIFICATION INFORMATION

### 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, 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

S.O.C. Code	CAREER OBJECTIVE	Reasoning Level	Grade Level	Math Level	Grade Level	Language Level	Grade Level
51-4121	Combination Welder	R4	9-12	M3	7-8	L3	7-8
51-2099	Welder/Fabricator	R3	7-8	M2	4-6	L2	4-6

### 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

## Recommended Scope and Sequence - SECONDARY SCHOOL

Subject	Grade 9	Grade 10	Grade 11	Grade 12
<b>TECHNICAL</b>			Safety Mathematics Oxyacetylene Gas Metal Arc Welding Flux Cored Arc Welding Plasma Cutting Grinding	Shielded Metal Arc Welding Gas Tungsten Arc Welding Blueprint Reading Metallurgy
<b>ENGLISH</b>	College Prep English I	College Prep English II	College Prep English III	College Prep English IV
<b>MATH</b>	Algebra I	Geometry	Algebra II	Advanced Math
<b>SCIENCE</b>	Biology	Chemistry	Physics	
<b>HUMANITIES</b>	Civics	US History	World History	
<b>OTHER</b>				

### 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.

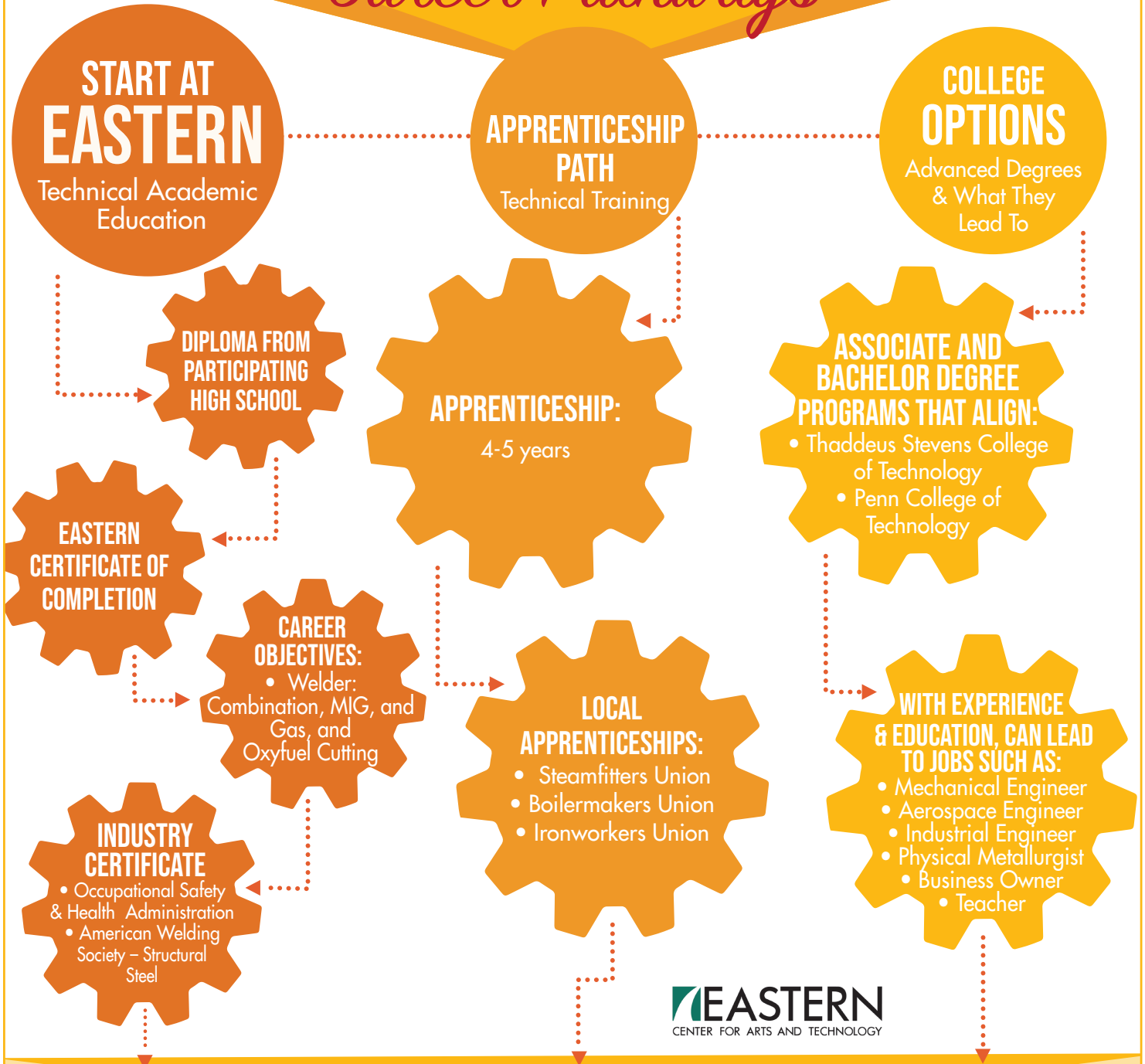


### POST-SECONDARY OPPORTUNITIES

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

# WELDING TECHNOLOGY

## *Career Pathways*



### ENTER WORKFORCE AS

#### ENTRY LEVEL WELDER

Eastern Catalytic  
Global Affinity, LLC  
SP Industries



#### WELDING APPRENTICE

Revitur Welding  
Fabspeed  
O'Donnell Metals

#### WELDER | ENGINEER

Havis  
Tescor

## **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

All EASTERN programs  
**STANDARDS**

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 acceptable 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.

