

# PREVIEW TO CAREER PATHWAYS

2016-2017



Kentucky Department of Education  
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# Preview to Career Pathways 2016-2017



**MISSION OF DOCUMENT:** A Consolidated Publication of Kentucky Career Pathways to Promote Local Development of Master Scheduling and Guidance Tools to Support Student Success in Career and College Readiness.

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## CAREER AND TECHNICAL EDUCATION TERMINOLOGY

CTE Terminology	Definition
<b>Career Pathway</b>	<p>In alignment with Federal Perkins Regulations, a Career Pathway will:</p> <ol style="list-style-type: none"> <li>I. incorporate secondary education and postsecondary education elements;</li> <li>II. include coherent and rigorous content aligned with challenging academic standards and relevant career and technical content in a coordinated, nonduplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education;</li> <li>III. may include the opportunity for secondary education students to participate in dual or concurrent enrollment programs or other ways to acquire postsecondary education credits; and</li> <li>IV. lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree;</li> </ol>
<b>CIP Code Definition</b>	The Classification of Instruction Program (CIP) provides a taxonomic scheme (i.e. classification of fields of study) that supports the accurate tracking and reporting of fields of study and program completion activity.
<b>Completer Student</b>	Secondary student who is leaving secondary education and completes four (4) or more credits in the pathway.
<b>Kentucky Occupational Skills Standards (KOSSA)</b>	Kentucky Occupational Skill Standards and Assessments is a career-ready technical measure for CCR state accountability and a performance indicator of technical skills attainment for federal Perkins accountability. These industry endorsed standards are developed in collaboration with business and industry partners and drive the development of assessments for career and technical education.
<b>Kentucky Valid List of Industry Certifications &amp; KOSSA Assessments</b>	The Kentucky Valid List of Industry Certifications & KOSSA Assessments document is updated annually and released on July 1 <sup>st</sup> of each year. Organized by CTE program areas and pathway, it serves as the official list of approved technical skill assessments for Perkins/CCR accountability. A link to this document can be found on the KOSSA homepage of the KDE website.
<b>Perkins</b>	The Carl D. Perkins Vocational and Technical Education Act was first authorized by the federal government in 1984 and reauthorized in 1998. Named for Carl D. Perkins, the act aims to increase the quality of technical education within the United States in order to help the economy. The Carl D. Perkins Career and Technical Education Act was last authorized on August 12, 2006. The new Act provides an increased focus on the academic achievement of career and technical education students, strengthens the connections between secondary and postsecondary education, and improves state and local accountability. The new law also includes requirements for “programs of study (which Kentucky refers to as Career Pathways)” that link academic and technical content across secondary and postsecondary education, and strengthened local accountability provisions that will ensure continuous program improvement. The Perkins Act provides almost \$1.3 billion in federal support for career and technical education programs in all 50 States, including support for integrated career pathways programs.
<b>Preparatory Student</b>	<p>Any student who is enrolled in a preparatory program who has <u>successfully completed two credits and has enrolled in the third credit</u> within an approved career pathway.</p> <ul style="list-style-type: none"> <li>• <b>“Completed two”</b> means on the transcript the student has passed and received 2 credits from valid course(s) as part of the pathway.</li> <li>• <b>“Enrolled in the third credit”</b> means the student is scheduled to take the third credit sometime during the academic year. It is expected the student will successfully complete the credit bearing course(s) during the year. If the student withdraws or fails the third credit course(s) (must receive a credit on the student transcript), his/her status must be changed from preparatory back to exploring.</li> </ul> <p><b>All <u>Senior Preparatory</u> students must sit for the KOSSA/Industry Certification assigned to the career pathway he/she is enrolled in, <u>unless</u> the student has previously had the opportunity to take a technical skills measure.</b></p>
<b>TEDS</b>	The Technical Education Database System (TEDS) is the official repository of student data for all career and technical education data in Kentucky, which includes Perkins and Career Readiness.
<b>Work-Based Learning (WBL)</b>	<p>Work-Based Learning can be experienced in multiple forms such as: cooperative education, entrepreneurial program, internship, mentoring, school-based enterprises, service learning and shadowing.</p> <p>Additional information related to WBL can be found via: <a href="http://education.ky.gov/CTE/cter/Pages/WBL.aspx">http://education.ky.gov/CTE/cter/Pages/WBL.aspx</a></p>

Kentucky Department of Education-Office of Career & Technical Education

<http://education.ky.gov/CTE/Pages/default.aspx>

College and Career Readiness for All

<b>College-Ready</b>	<b>Career-Ready</b>		<b>College &amp; Career-Ready</b>	
(1 Point)	(1 Point)		(1.5 Points)	
A student must meet benchmarks on one of the following:	A student must meet benchmarks on one from <b>each</b> of the following columns:		A student must meet benchmarks on one from <b>each</b> of the following columns:	
ACT COMPASS KYOTE	Career-Ready Academic	Career-Ready Technical	College-Ready Academic	College-Ready Technical
	ASVAB WorkKeys	KOSSA Industry Certificate	ACT COMPASS KYOTE	KOSSA Industry Certificate

**College-Ready**

A **college-ready student** meets the benchmarks on the **ACT** (18 for English, 20 for Reading and 19 for Mathematics) or passed either **COMPASS** (74 for English, 85 for Reading and 36 for Mathematics) or **KYOTE** (6 for Writing, 20 for Reading, 22 for College Ready Math and 14 for College Algebra) college placement tests. Students who fail one or more measures on the ACT but pass the corresponding measure on one of the placement tests are college-ready.

**Career-Ready**

A **career-ready student** is preparatory (has completed two credits and is enrolled in a third credit) for a CTE career pathway (state-approved sequence of progressive, nonduplicative courses that result in earning four credits), has received either an approved industry certification or Kentucky Occupational Skill Standards Assessment (**KOSSA**) certificate (with a minimum score of 70) related to his or her career pathway, **and** has met the benchmark on **ACT WorkKeys** with a minimum score of 75 for each part (Applied Mathematics, Locating Information and Reading for Information) which is equivalent to a Silver Certificate or above **or** a minimum score of 50 on the **ASVAB**.

**College and Career Ready**

A **college and career ready student** is preparatory for a CTE career pathway, has received either an approved industry certification or KOSSA certificate related to his or her pathway **and** has qualified to be college-ready based on the above definition.

Thank you to Jefferson County Public Schools for sharing this design concept.

# 2016-2017

## Preview to Career Pathways Document Explained

Each Career Pathway is formatted consistently.

Program Area

Career Pathway Name & CIP Code

Description of Career Pathway

Example ILP Related Career Titles

MARKETING EDUCATION CAREER PATHWAYS 2016-2017	
ADVERTISING CIP 09.0903.00	
PATHWAY DESCRIPTION: A program that focuses on the creation, execution, transmission, and evaluation of commercial messages in various media intended to promote and sell products, services, and brands; and that prepares individuals to function as advertising assistants, technicians, and managers. Includes instruction in advertising theory, marketing strategy, advertising design and production methods, campaign methods and techniques, media management, related principles of business management, and applicable technical and equipment skills.	
BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i>  <i>Complete (2-3) TWO-THREE CREDITS from the following:</i> <ul style="list-style-type: none"><li>080716 Principles of Marketing <u>OR</u></li><li>081411 Retail Marketing</li><li>080717 Advanced Marketing</li><li>081511 Advertising &amp; Promotions</li></ul> <i>Choose (1-2) ONE-TWO CREDITS from the following:</i> <ul style="list-style-type: none"><li>081512 Promotional Applications &amp; Media</li><li>081431 Retail Marketing Management</li><li>080310 Entrepreneurship*</li><li>080718 Financial Literacy (Interdisciplinary)* <u>OR</u></li><li>080772 Mathematics for Business &amp; Industry (Interdisciplinary)*</li></ul>	Marketing Specialist Event Planner Sales Representative Retail Salesperson Advertising Copywriter Advertising Account Executive

Best practice CTE courses with assigned state course codes

# 2016-2017

## Preview to Career Pathways Document Explained

The *Preview to Career Pathways* document lists best practice courses.

Designed to Promote Guidance Through a Four-Course Sequence

Foundational Skills

Flexibility to specialize Pathway with local resources (such as partnerships with Business and Industry or dual credit opportunities) & local CTE Program Area teacher preference based on state approved pathway courses.

FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS 2016-2017	
EARLY CHILDHOOD EDUCATION CIP Code 13.1210.00	
<b>PATHWAY DESCRIPTION:</b> The Early Childhood Education pathway will address a skill set necessary for success in early childhood education so that individuals can teach students ranging in age from infancy through eight years (grade three), depending on the school system or state regulations. This pathway is targeted for individuals preparing for careers related to early childhood education, such as those associated with child care, teaching, community-based children's programs, social services or counseling for children, and after-school programs.	
BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i>	Early Childhood Educator
<i>Complete (3) THREE CREDITS:</i>	Psychologist
<ul style="list-style-type: none"><li>• 200223 Early Lifespan Development**</li><li>• 200261 Child Development Services I</li><li>• 200262 Child Development Services II</li></ul>	Nanny
<i>Choose (1) ONE CREDIT</i>	Pediatrician
<ul style="list-style-type: none"><li>• 200113 FACS Essentials <u>AND/OR</u></li><li>• 200161 FACS Essentials Health*</li><li>• 331020 Principles of Teaching</li><li>• 200171 Relationships**</li><li>• 200173 Parenting**</li><li>• 200210 Co-op: Early Childhood Education</li></ul>	Midwife
Note: (*) Indicates half-credit (.5) course	
Note: (**) Indicates course can be half-credit (.5) OR a full	

# 2016-2017

## Preview to Pathways Document Explained

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It is recommended that local schools use the *Preview to Career Pathways* document to **CHOOSE/CUSTOMIZE** career pathways prior to developing a master schedule and scheduling students.

CTE Program Area Teachers should be involved in choosing the specific courses in the pathway and differentiate between any of the “OR” options based on state approved pathway courses.

### BEST PRACTICE CORE

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*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) TWO-THREE CREDITS:*

- 080716 Principles of Marketing OR 081411 Retail Marketing
- 080717 Advanced Marketing
- 081511 Advertising & Promotions

*Choose (1-2) ONE-TWO CREDITS from the following:*

- 081512 Promotional Applications & Media
- 081431 Retail Marketing Management
- 080310 Entrepreneurship
- 080707 Marketing Education Internship
- 080708 Marketing Education Co-op

# 2016-2017

## Preview to Career Pathways Document Explained

AUTOMOTIVE EDUCATION CAREER PATHWAYS 2016-2017	
AUTOMOTIVE MAINTENANCE AND LIGHT REPAIR TECHNICIAN CIP 47.0604.01	
PATHWAY DESCRIPTION: A program that prepares individuals to repair, service, and maintain all types of automobiles. Includes instruction in systems, engine performance, engine repair, suspension and steering, and drive trains, and heating and air condition systems.	
BEST PRACTICE COURSES	
<i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i>	
Complete (4) <b>FOUR CREDITS</b> from the following:	
<ul style="list-style-type: none"><li>• 470507 Automotive Maintenance and Light Repair Section</li><li>• 470509 Automotive Maintenance and Light Repair Section</li><li>• 470511 Automotive Maintenance and Light Repair Section</li><li>• 470513 Automotive Maintenance and Light Repair Section</li></ul>	
These courses can be taken in ANY order. There are NO prerequisites required to enter these classes.	
Example: "Section "D" can be taken before Section "A". "Section "C" can be taken before Section "B".	

Certain Career Pathways directly align with Industry and require a SPECIFIC four course sequence with labs to meet Industry required hours. Therefore, there is no flexibility in pathway courses in these specific situations.

COMPLIMENTARY OR ADVANCED COURSEWORK BEYOND COLLISION REPAIR TECHNOLOGY PATHWAY(S)	
Upon completion of a pathway, additional coursework to enhance student learning is encouraged.	
Credits earned in Advanced or Complimentary Coursework "Beyond the Pathway" may not be substituted for pathway courses in order to achieve Preparatory or Completer status.	
470652 Non-Structural	
470601 Co-Op I Collis	
460301 Industrial Safe	
060170 Personal Finan	
470604 Collision Repa	
470679 Special Projec	
060191 Workplace Pri	

Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework "Beyond the Pathway" may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

## 2016-2017 Career Pathway Request Guidance

This guidance document is designed to provide districts/schools with all requirements, processes, and procedures that will be used for career pathway requests.

1. All approved pathways are on the KDE website in the Preview to Pathways document, which can be found at the following URL:  
[http://education.ky.gov/CTE/ctepa/Documents/FINAL%20MASTER%20Preview%20to%20Career%20Pathways%20Document%202016\\_2017.pdf](http://education.ky.gov/CTE/ctepa/Documents/FINAL%20MASTER%20Preview%20to%20Career%20Pathways%20Document%202016_2017.pdf)
2. Any special approvals that were granted prior to the 2015-2016 school year must be resubmitted and reviewed using the online Special Approval form. Special Approvals granted during the 2015-2016 school year, unless indicated for 15-16 ONLY in the COMMENTS box, may still continue and there is no need to submit a new Special Approval.
3. Courses count in a pathway during the year the courses were taken. For example, if a student took Digital Literacy in 14-15 and it was part of their pathway, that credit would count for that student until they graduate. However, if Digital Literacy is no longer part of the pathway in 15-16, and a student takes it in 15-16, regardless of the year they started their pathway, it will **not** count.
4. For 2016-2017, the following procedures will be followed:
  - I. If your school has a pathway/CIP Code already in TEDS and:
    - a. Your school plans to follow the courses listed in the approved pathway, then you will not need to do anything.
    - b. Your district/school wants to include a course in the pathway that is not part of the approved pathway, then you will need to complete a [Career Pathway Special Approval Form](#) and provide justification for the use of that course. You will also need to include all courses that you offer at your school that you wish to count towards the pathway.
    - c. Your school wants to remove that pathway, then you will need to ensure that all students that were in the pathway have left their home school (through graduation/transfer/dropout) and submit an email to the [State TEDS Coordinator](#) with the name and CIP Code of the pathway you wish to remove.
  - II. If your school does not have a pathway/CIP Code in TEDS and:
    - a. Your school plans to follow the courses listed in the approved pathway, then you will need to send an email to the [State TEDS Coordinator](#) with the pathway name and CIP Code that you will be using.
    - b. Your school wants to offer the pathway, but use a course that is not part of the approved pathway, then you will need to complete a [Career Pathway Special Approval Form](#) and provide justification for the use of that course. You will also need to include all courses that you offer at your school that you wish to count toward the pathway.
  - III. If your school wants to create a new and innovative pathway that is not already an approved KDE pathway, then you will need to submit [New Career Pathway Creation Request](#) to the Career Pathways Branch (all instructions included in the linked document).
  - IV. All requests in sections I-III are required to be completed and submitted in the 2016-2017 Career Pathway request window. The request window is from February 1<sup>st</sup> – October 1<sup>st</sup> and please allow 2-3 weeks for review/approval.

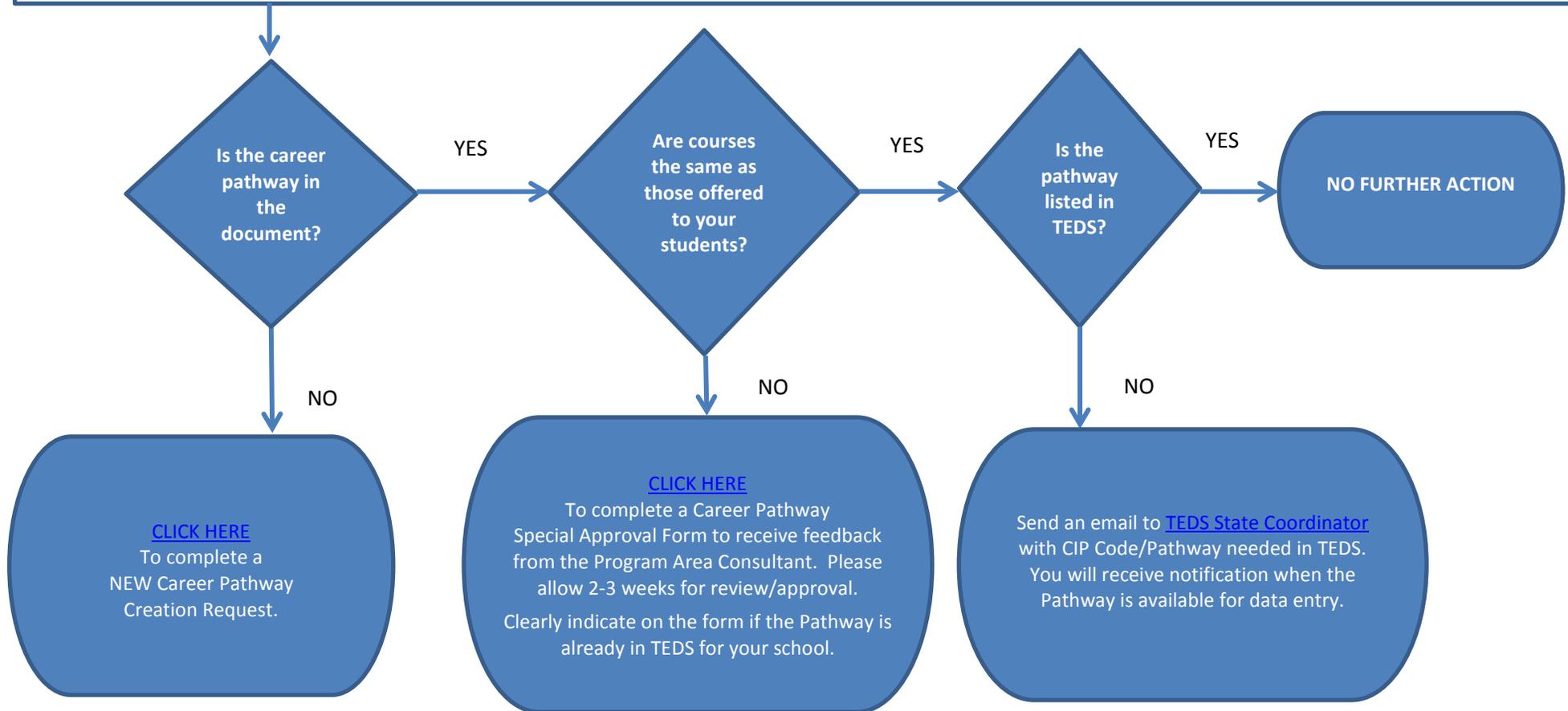
### STEP ONE:

Access and review the “2016-2017 Preview to Career Pathways Document” published by the Office of Career & Technical Education.

<http://education.ky.gov/CTE/ctepa/Pages/default.aspx>

### STEP TWO:

For EACH pathway, compare the list of courses listed in the document to the courses advised to students at your school for the pathway.



**CAREER PATHWAY SPECIAL APPROVAL FORMS MUST BE SUBMITTED IN THE WINDOW OF FEBRUARY 1<sup>ST</sup> THRU OCTOBER 1<sup>ST</sup>.**

# **AGRICULTURAL EDUCATION**

# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## AGRIBUSINESS SYSTEMS CIP 01.0101.00

**PATHWAY DESCRIPTION:** Agribusiness systems contribute to the production, processing, marketing, distribution, financing and development of agricultural commodities and resources. This includes food, fiber, wood products, natural resources, horticulture, and other plant and animal products and services. Agribusiness is a high-tech industry that uses satellite systems, computer databases and spreadsheets, biotechnology and many other innovations to increase efficiency and profitability.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS from the following:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 010131 Agribusiness/Farm Management
- 010121 Ag. Employability Skills
- 010111 Agriculture Sales & Marketing
- 010110 Agriculture Communications

*May Substitute ONE Credit Below for Pathway Courses:*

- 010641 Greenhouse Technology
- 020503 Small Animal Technology
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Entrepreneur  
Photojournalist  
Agriculture Lawyer  
Sales Representative  
Independent Business Owner  
Editor  
Retail Salesperson  
Auctioneer

# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## AGRIBIOTECHNOLOGY SYSTEMS CIP 26.1200.00

**PATHWAY DESCRIPTION:** Agribiotechnology focuses on the application of scientific principles and techniques to advance the agriculture industry. Focusing on animal and plant concepts, this pathway develops competency by analyzing current procedures in agriculture while synthesizing new ways of thinking. Microbiology, molecular biology, enzymology and immunology procedures are centerpieces for determining how to feed an ever growing world population.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 030713 Agri-Biology
- 020210 Agribiotechnology
- 020511 Veterinary Science
- 010702 Food Science & Technology
- 030609 Environmental Science & Technology

*May Substitute ONE Credit Below for Pathway Coe:*

- 020520 Aquaculture
- 010121 Ag. Employability Skills
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Biotechnologist  
Veterinarian  
Marine Biologist  
Biomedical Engineer  
Biologist  
Biochemist  
Microbiologist  
Botanist

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# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## AGRICULTURAL POWER, STRUCTURAL, TECHNICAL SYSTEMS CIP 01.0201.00

**PATHWAY DESCRIPTION:** The Power, Structural and Technical Systems pathway is built on the application of concepts in engineering, hydraulics, pneumatics, electronics, power, structures, and controls to the field of agriculture. Students design agricultural structures as well as machinery and equipment, while utilizing safe practices of operation and maintenance.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS from the following:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 010241 Agriculture Construction Skills
- 010231 Small Power Equipment
- 010212 Agriculture Power and Machinery Operation
- 010211 Agriculture Structures and Designs

*May Substitute ONE Credit Below for Pathway Courses:*

- 010111 Agriculture Sales and Marketing
- 010121 Ag. Employability Skills
- 010131 Agribusiness/Farm Management
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Agricultural Engineer  
Welder  
Mechanical Engineer  
Diesel Technician  
Electrical Engineer  
Heavy Equipment Technician  
Farm Equipment Technician  
Small Engine Mechanic

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# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## ANIMAL SCIENCE SYSTEMS CIP 01.0901.00

**PATHWAY DESCRIPTION:** This program that focuses on the scientific principles that underline the breeding, care, and management of agricultural animals, and the production, processing, and distribution of agricultural animal products. This includes developing better, more efficient ways of producing and processing meat, poultry, eggs and dairy products, as well as studying genetics, nutrition, reproduction, growth and development of animals.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 020501 Animal Science
- 020502 Animal Technology
- 020510 Equine Science
- 020503 Small Animal Technology
- 020511 Veterinary Science
- 020504 Murray State University Advanced Animal Science

*May Substitute ONE Credit Below for Pathway Courses:*

- 010702 Food Science & Technology
- 010701 Food Processing, Distribution & Marketing
- 020520 Aquaculture
- 010111 Agriculture Sales and Marketing
- 030713 Agribiology
- 010131 Agribusiness/Farm Management
- 010121 Ag. Employability Skills
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Veterinarian  
Animal Scientist  
Marine Biologist  
Zoologist  
Horse Trainer  
Animal Breeder  
Farmer  
Veterinary Technician

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# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## ENVIRONMENTAL SCIENCE/NATURAL RESOURCES SYSTEMS CIP 03.0101.00

**PATHWAY DESCRIPTION:** This program that focuses on the studies and activities relating to the natural environment and its conservation, use, and improvement. Includes instruction in subjects such as climate, air, soil, water, land, fish and wildlife, and plant resources; in the basic principles of environmental science and natural resources management; and the recreational and economic uses of renewable and nonrenewable natural resources.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 030610 Forestry
- 030609 Environmental Science & Technology
- 030611 Wildlife Resources
- 020520 Aquaculture
- 010611 Plant & Land Science
- 030713 Agribiology

*May Substitute ONE Credit Below for Pathway Courses:*

- 010121 Ag. Employability Skills
- 010111 Agriculture Sales & Marketing
- 010651 Nursery and Orchard Tech
- 010641 Greenhouse Technology
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Conservation Officer  
Park Warden / Ranger  
Outdoor Guide  
Environmental Engineer  
Ecologist  
Wildlife Technician  
Taxidermist  
Arborist

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# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## FOOD SCIENCE AND PROCESSING SYSTEMS CIP 01.1001.00

**PATHWAY DESCRIPTION:** A program that focuses on the application of biological, chemical, and physical principles to the study of converting raw agricultural products into processed forms suitable for direct human consumption, and the storage of such products. Includes instruction in applicable aspects of the agricultural sciences, human physiology and nutrition, food chemistry, agricultural products processing, food additives, food preparation and packaging, food storage and shipment, and related aspects of human health and safety including toxicology and pathology.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (1-2) ONE - TWO CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 030715 Principles of Agricultural Science and Technology</li> <li>• 030711 Agriscience</li> </ul> <p><i>Choose (2-3) TWO - THREE CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 030713 Agri-Biology</li> <li>• 010702 Food Science &amp; Technology</li> <li>• 010701 Food Processing, Distribution &amp; Marketing</li> <li>• 020210 Agribiotechnology</li> </ul> <p><i>May Substitute <u>ONE</u> Credit Below for Pathway Courses:</i></p> <ul style="list-style-type: none"> <li>• 020501 Animal Science</li> <li>• 020520 Aquaculture</li> <li>• 010111 Agriculture Sales &amp; Marketing</li> <li>• 010121 Ag. Employability Skills</li> <li>• 030790 Agricultural Education Co-op</li> <li>• 030791 Agricultural Education Internship</li> </ul>	<p>Food Inspector</p> <p>Butcher</p> <p>Food Scientist</p> <p>Veterinarian</p> <p>Chef</p> <p>Cook</p> <p>Scientist</p> <p>Dietitian</p>

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# AGRICULTURAL EDUCATION CAREER PATHWAYS 2016-2017

## HORTICULTURE AND PLANT SCIENCE SYSTEMS CIP 01.1101.00

**PATHWAY DESCRIPTION:** This program that focuses on the scientific principles that underlie the breeding, cultivation, and production of agricultural plants, and the production, processing, and distribution of agricultural plant products. Includes instruction in the plant sciences, crop cultivation and production, and agricultural and food products processing.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE - TWO CREDITS:*

- 030715 Principles of Agricultural Science and Technology
- 030711 Agriscience

*Choose (2-3) TWO - THREE CREDITS from the following:*

- 010611 Plant/Land Science
- 010621 Floriculture/Floral Design
- 010641 Greenhouse Technology
- 010651 Nursery /Orchard Technology
- 010631 Landscaping/Turf Management
- 010610 Crop Technology

*May Substitute ONE Credit Below for Pathway Courses:*

- 010131 Agribusiness/Farm Management
- 010121 Ag. Employability Skills
- 010111 Agriculture Sales and Marketing
- 030713 Agribiology
- 030790 Agricultural Education Co-op
- 030791 Agricultural Education Internship

Horticulturist  
Agronomist  
Landscape  
Farmer  
Scientist  
Landscape Architect  
Nursery / Greenhouse  
Grower  
Botanist

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<p style="text-align: center;"><b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND AGRICULTURAL EDUCATION PATHWAY(S)</b></p>
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<p>Upon completion of a pathway, additional coursework to enhance student learning is encouraged.</p>
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<p>Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.</p>
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 030702 Leadership Dynamics</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>             |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                |

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# **BUSINESS EDUCATION**

# BUSINESS EDUCATION CAREER PATHWAYS

**2016-2017**

## ACCOUNTING CIP 52.0301.00

**PATHWAY DESCRIPTION:** A program that prepares individuals to practice the profession of accounting and to perform related business functions. Includes instruction in accounting principles and theory, financial accounting, managerial accounting, cost accounting, budget control, tax accounting, legal aspects of accounting, auditing, reporting procedures, statement analysis, planning and consulting, business information systems, accounting research methods, professional standards and ethics, and applications to specific for-profit, public, and non-profit organizations.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) **TWO-THREE CREDITS** from the following:*

- 060112 Digital Literacy OR  
110110 Computer Literacy (IT) OR  
060111 Business Principles and Applications
- 060122 Accounting & Finance Foundations
- 070122 Financial Accounting
- 070125 Advanced Accounting (Requires Special Teacher Training)

*Choose (1-2) **ONE-TWO CREDITS** from the following:*

- 060170 Financial Literacy(Interdisciplinary)\*
- 060411 Business Management\*
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Accountant  
Forensic Accountant  
Planner  
Tax Preparer  
Auditor  
Auditing Clerk  
Budget Analyst  
Tax Examiner

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**ADMINISTRATIVE SUPPORT  
CIP 52.0401.00**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to perform the duties of administrative assistants and/or secretaries and stenographers. Includes instruction in business communications, principles of business law, word processing and data entry, office machines operation and maintenance, office procedures, public relations, secretarial accounting, filing systems and records management, and report preparation.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-4) TWO-FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy <u>OR</u> 060111 Business Principles and Applications</li> <li>• 060122 Accounting &amp; Finance Foundations <u>OR</u> 060170 Financial Literacy (Interdisciplinary)*</li> <li>• 070743 Advanced Computer &amp; Technology Applications</li> <li>• 070750 Microsoft Office (MOS)</li> </ul> <p><i>Choose (1-2) ONE-TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060155 Business Communications</li> <li>• 060142 Word Processing</li> <li>• 060121 Business Law</li> <li>• 060511 Business Economics (Interdisciplinary)*</li> <li>• 060108 Business Education Internship <u>OR</u> 060107 Business Education Co-op</li> </ul>	<p>Administrative Assistant</p> <p>Human Resources Specialist</p> <p>Bookkeeper</p> <p>Court Reporter</p> <p>Billing &amp; Accounts Collector</p>

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**BUSINESS MANAGEMENT  
CIP 52.0201.01**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to plan, organize, direct, and control the functions and processes of a firm or organization. Includes instruction in management theory, human resources management and behavior, accounting and other quantitative methods, purchasing and logistics, organization and production, marketing, and business decision-making.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 060111 Business Principles and Applications OR  
080716 Principles of Marketing
- 060411 Business Management\*

*Choose (2) TWO CREDITS from the following:*

- 060112 Digital Literacy OR  
110110 Computer Literacy
- 060511 Business Economics (Interdisciplinary)\*
- 060122 Accounting & Finance Foundations
- 060170 Financial Literacy (Interdisciplinary)\*
- 060172 Mathematics for Business & Industry (Interdisciplinary)\*
- 060185 Entrepreneurship (Interdisciplinary)\*
- 060121 Business Law
- 060188 International Business
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Entry Level Manager  
Money Manager  
Account Manager  
Real Estate Agent  
Venture Capitalist  
Insurance Agent  
Association Manager  
Quality Controller

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**BUSINESS MULTIMEDIA  
CIP 52.0501.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to function in an organization as a composer, editor and proofreader of business or business-related communications.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-4) TWO-FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy</li> <li>• 060751 Multimedia Publishing</li> <li>• 060199 Web Page Design</li> <li>• 060761 Advanced Multimedia</li> </ul> <p><i>Choose (1-2) ONE-TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060155 Business Communication</li> <li>• 081512 Promotional Applications &amp; Media (Marketing)</li> <li>• 070743 Advanced Computer &amp; Technology Applications <u>OR</u> 070750 Microsoft Office (MOS)</li> <li>• 060142 Word Processing</li> <li>• 060108 Business Education Internship <u>OR</u> 060107 Business Education Co-op</li> </ul>	<p>Public Relations Specialist</p> <p>Desktop Publisher</p> <p>Proofreader</p> <p>Web Designer</p> <p>Multimedia Artist</p>

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**BUSINESS TECHNOLOGY  
CIP 52.0408.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to provide basic administrative support under the supervision of office managers, administrative assistants, secretaries, and other office personnel. Includes instruction in typing, keyboarding, filing, general business correspondence, office equipment operation, and communications skills.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 060112 Digital Literacy OR  
110110 Computer Literacy OR  
060111 Business Principles and Applications
- 060751 Multimedia Publishing OR  
060199 Web Page Design
- 060411 Business Management (Interdisciplinary)\* OR  
060511 Business Economics (Interdisciplinary)\*

*Choose (1) **ONE CREDIT** from the following:*

- 060170 Financial Literacy (Interdisciplinary)\*
- 060172 Mathematics for Business & Industry (Interdisciplinary)\*
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 060122 Accounting & Finance Foundations
- 060142 Word Processing
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Data Entry Clerk  
Telephone Operator  
Receptionist/Information Clerk  
Courier/Messenger

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**DATABASE MANAGEMENT  
CIP 52.1299.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals for development and management of database systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
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*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 060112 Digital Literacy OR  
110110 Computer Literacy
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 070331 Data Modeling/SQL
- 070399 Web Data Management

Database Developer

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**FINANCE  
CIP 52.0803.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform a wide variety of customer services in banks, insurance agencies, savings and loan companies, and related enterprises. Includes instruction in communications and public relations skills, business equipment operation, and technical skills applicable to the methods and operations of specific financial or insurance services.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) **TWO-THREE CREDITS** from the following:*

- 060112 Digital Literacy OR  
110110 Computer Literacy OR  
060111 Business Principles and Applications
- 060122 Accounting & Finance Foundations
- 060311 Financial Services I\*

*Choose (1-2) **ONE-TWO CREDITS** from the following:*

- 060351 Financial Services II\*
- 070122 Financial Accounting
- 070125 Advanced Accounting (Requires Special Teacher Training)
- 060399 Advanced Finance & Credit\*
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 060170 Financial Literacy (Interdisciplinary)\*
- 060108 Business Education Internship OR  
060107 Business Education Co-op

- Bank Teller
- Bank Manager
- Loan Officer
- Investment Banker
- Actuary (evaluates insurance risk/claims)
- Investment Advisor
- Personal Financial Planner
- Research Analyst (Financial)

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2016-2017

## INFORMATICS PATHWAY CIP 11.0802.00

**PATHWAY DESCRIPTION:** Students will apply software systems such as Excel, Access and other industry software to acquire, collect, store and communicate data in meaningful ways to clients. Students will manage projects, work in teams, think critically, solve problems and propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to effectively solve real-world challenging problems. Through project-based learning, students will explore the future of informatics and learn those habits of behavior and mind unique to professionals in the field. Informatics leverages technology, data and communication by instilling in a new generation the knowledge, imagination and flexibility to tackle complex issues successfully in a data-rich digital world. It is the process of designing systems that take raw data and convert it into new knowledge that can be applied to any field while considering the impact on individuals, organizations and society. **THIS IS A PATHWAY SPECIFIC TO THE SOUTHERN REGION EDUCATION BOARD (SREB). EACH COURSE REQUIRES TEACHER SUMMER TRAINING BEFORE IMPLEMENTATION.**

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** in the following:*

- 111001 Computer, Networks and Databases (**SREB**)
- 111002 Design for the Digital World (**SREB**)
- 111003 Databases in the Cloud (**SREB**)
- 111004 Developing a Cloud Presence (**SREB**)
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Note: (SREB) courses require an agreement between the Southern Region Education Board and the District. Please see the link to [SREB](#) for further information.

### EXAMPLE ILP-RELATED CAREER TITLES

Bioinformaticist  
Data Mapper  
Chemical Informaticist  
Database Designer  
Digital Artist  
Human-Computer Interface Designer  
Information Architect  
Usability Analyst  
Interaction Designer  
System Integrator  
Web Designer  
Software Engineer  
Project Manager  
Informatics Support

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**INFORMATION PROCESSING  
CIP 52.0407.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to support business information operations by using computer equipment to enter, process, and retrieve data for a wide variety of administrative purposes. Includes instruction in using basic business software and hardware, business computer networking, principles of desktop publishing, preparing mass mailings, compiling and editing spreadsheets, list maintenance, preparing tables and graphs, receipt control, and preparing business performance reports.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDIT:*

- 060112 Digital Literacy OR  
110110 Computer Literacy OR  
060111 Business Principles and Applications

*Complete (1) ONE CREDIT:*

- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)

*Complete (1) ONE CREDIT:*

- 060751 Multimedia Publishing OR  
060142 Word Processing OR  
081512 Promotional Applications & Media (Marketing) OR  
060155 Business Communication

*Complete (1) ONE CREDIT:*

- 060122 Accounting & Finance Foundations OR  
060170 Financial Literacy (Interdisciplinary)\* OR  
060172 Mathematics for Business & Industry (Interdisciplinary)\*  
060108 Business Education Internship OR  
060107 Business Education Co-op

Receptionist/Information Clerk  
Data Entry Clerk  
Bill and Account Collector  
Insurance Claims Adjuster  
Administrative Assistant

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

# BUSINESS EDUCATION CAREER PATHWAYS

2016-2017

## LEGAL OFFICE

CIP 22.0301.00

**PATHWAY DESCRIPTION:** A program that prepares individuals to serve as legal office managers, special assistants, and legal secretaries. Includes instruction in office management, secretarial science, principles of U.S. or Canadian law, legal terminology and documentation, legal research, legal software applications, law office procedures, record-keeping, billing, applicable policies and regulations, and professional standards and ethics.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 070881 Legal Office
- 060121 Business Law

*Complete (1) **ONE CREDIT** from the following:*

- 060111 Business Principles and Applications OR  
060112 Digital Literacy OR  
110110 Computer Literacy
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Legal Secretary  
Court Clerk/Reporter  
Legal Assistant

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**MEDICAL BUSINESS OFFICE  
CIP 51.0716.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform the duties of special assistants and personal secretaries for practicing physicians and nurses, health care facilities and services administrators, and other health care professionals. Includes instruction in business and medical communications, medical terminology, principles of health care operations, public relations and interpersonal communications, software applications, record-keeping and filing systems, scheduling and meeting planning, applicable policy and regulations, and professional standards and ethics.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) TWO-THREE CREDITS:*

- 060112 Digital Literacy OR 110110 Computer Literacy OR  
060111 Business Principles and Applications
- 070743 Advanced Computer & Technology Applications OR  
070750 Microsoft Office (MOS)
- 070971 Medical Office

*Choose (1-2) ONE-TWO CREDITS:*

- 060122 Accounting & Finance Foundations OR  
060170 Financial Literacy (Interdisciplinary)\* OR  
060172 Mathematics for Business & Industry (Interdisciplinary)\* OR  
070125 Advanced Accounting (Requires Special Teacher Training)
- 170131 Medical Terminology (Health Science teacher certification)  
(.5 credit)
- 170141 Emergency Procedures for Healthcare Professionals (Health  
Science teacher certification) (.5-1 credit)
- 060411 Business Management
- 060108 Business Education Internship OR  
060107 Business Education Co-op

Health Records  
Professional  
  
Medical Secretary  
  
Health Care  
Administrator

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**BUSINESS & MARKETING EDUCATION  
CIP 13.1310.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to teach vocational sales and marketing operations/marketing and distributive education programs at various educational levels.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-3) TWO – THREE CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy</li> <li>• 060111 Business Principles and Applications <u>OR</u> 080716 Principles of Marketing</li> <li>• 331020 Principles of Teaching</li> </ul> <p><i>Choose (1-2) ONE – TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 070743 Advanced Computer and Technology Applications <u>OR</u> 070750 Microsoft Office (MOS)</li> <li>• 080311 Business Management*</li> <li>• 060122 Accounting &amp; Finance Foundations</li> <li>• 060170 Financial Literacy (Interdisciplinary)*</li> <li>• 080717 Advanced Marketing</li> <li>• 080310 Entrepreneurship*</li> <li>• 060108 Business Education Internship <u>OR</u> 060107 Business Education Co-op</li> </ul>	<p>Business &amp; Marketing Education Teacher</p> <p>Corporate Trainer</p>

\* Alternate course codes available on pages 2-3 of the [Business Education Program of Studies](#)

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**BUSINESS EDUCATION CAREER PATHWAYS  
2016-2017**

**WEB DESIGN FOR BUSINESS  
CIP 52.0208.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to plan, manage, supervise, and market electronic business operations, products, and services provided online via the Internet. Includes instruction in business administration, information technology, information resources management, web design, computer and Internet law and policy, computer privacy and security, e-trading, insurance, electronic marketing, investment capital planning, enterprise operations, personnel supervision, contracting, and product and service networking.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3-4) **THREE-FOUR CREDITS:***

- 060112 Digital Literacy OR  
110110 Computer Literacy
- 060751 Multimedia Publishing
- 060761 Advanced Multimedia
- 060199 Web Page Design

*Choose (1) **ONE CREDIT** from the following:*

- 080716 Principles of Marketing
- 081511 Advertising & Promotions
- 081512 Promotional Applications & Media
- 060108 Business Education Internship OR  
060107 Business Education Co-op

E-Business Consultant  
Website Designer  
Social Media Consultant  
Telemarketer

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<p style="text-align: center;"><b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND BUSINESS PATHWAY(s)</b></p>
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<p>Upon completion of a pathway, additional coursework to enhance student learning is encouraged.</p>
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<p>Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.</p>
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| <ul style="list-style-type: none"><li>• 060196 Leadership Dynamics</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>             |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                |

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# **MARKETING EDUCATION**

# MARKETING EDUCATION CAREER PATHWAYS

**2016-2017**

## ADVERTISING CIP 09.0903.00

**PATHWAY DESCRIPTION:** A program that focuses on the creation, execution, transmission, and evaluation of commercial messages in various media intended to promote and sell products, services, and brands; and that prepares individuals to function as advertising assistants, technicians, and managers. Includes instruction in advertising theory, marketing strategy, advertising design and production methods, campaign methods and techniques, media management, related principles of business management, and applicable technical and equipment skills.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-3) <b>TWO-THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 080716 Principles of Marketing <u>OR</u> 081411 Retail Marketing</li> <li>• 080717 Advanced Marketing</li> <li>• 081511 Advertising &amp; Promotions</li> </ul> <p><i>Choose (1-2) <b>ONE-TWO CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 081512 Promotional Applications &amp; Media</li> <li>• 081431 Retail Marketing Management</li> <li>• 080310 Entrepreneurship*</li> <li>• 080718 Financial Literacy (Interdisciplinary)* 080772 Mathematics for Business &amp; Industry (Interdisciplinary)*</li> <li>• 080708 Marketing Education Internship <u>OR</u> 080707 Marketing Education Co-op</li> </ul>	<p>Marketing Specialist</p> <p>Event Planner</p> <p>Sales Representative</p> <p>Retail Salesperson</p> <p>Advertising Copywriter</p> <p>Advertising Account Executive</p>

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**FASHION MARKETING  
CIP 52.1904.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform operations connected with the distribution and sale of apparel and accessories. Includes instruction in wholesaling and retailing, apparel technologies, distribution, customer sales and service skills, and principles of consumer research and sales forecasting.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2-3) **TWO-THREE CREDITS** from the following:*

- 080716 Principles of Marketing OR  
081411 Retail Marketing
- 080717 Advanced Marketing
- 080111 Fashion Marketing

*Choose (1-2) **ONE-TWO CREDITS** from the following:*

- 080132 Fashion Marketing Management
- 081431 Retail Marketing Management
- 080310 Entrepreneurship\*
- 080718 Financial Literacy (Interdisciplinary)\* OR  
080772 Mathematics for Business & Industry (Interdisciplinary)\*
- 080708 Marketing Education Internship OR  
080707 Marketing Education Co-op

Fashion Retailer  
Fashion Designer  
Marketing Specialist  
Sales Representative  
Retail Salesperson  
Stock Clerk

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**MANAGEMENT/ENTREPRENEURSHIP  
CIP 52.0701.00**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to perform development, marketing and management functions associated with owning and operating a business.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080716 Principles of Marketing <u>OR</u> 060111 Business Principles and Applications</li> <li>• 080311 Business Management (Marketing) <u>OR</u> 060411 Business Management (Business)</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080310 Entrepreneurship*</li> <li>• 080717 Advanced Marketing</li> <li>• 081511 Advertising &amp; Promotions</li> <li>• 080718 Financial Literacy (Interdisciplinary)*</li> <li>• 060122 Accounting and Finance Foundations</li> <li>• 060112 Digital Literacy <u>OR</u> 110110 Computer Literacy</li> <li>• 080708 Marketing Education Internship <u>OR</u> 080707 Marketing Education Co-op</li> </ul>	<p>Entrepreneur</p> <p>Small Business Owner</p> <p>Account Manager</p> <p>Real Estate Agent</p> <p>Venture Capitalist</p> <p>Insurance Agent</p> <p>Association Manager</p> <p>Quality Controller</p>

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**FINANCIAL SERVICES  
CIP 52.1908.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform marketing and operational tasks associated with the provision of personal and financial services. Includes instruction in banking, marketing research, advertising, promotional campaign organization, insurance, media relations, and applicable technical and administrative skills.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080716 Principles of Marketing</li> <li>• 080410 Financial Services I*</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080451 Financial Services II*</li> <li>• 080717 Advanced Marketing</li> <li>• 081511 Advertising &amp; Promotions</li> <li>• 080310 Entrepreneurship*</li> <li>• 080708 Marketing Education Internship <u>OR</u> 080707 Marketing Education Co-op</li> </ul>	<p>Bank Marketing Specialist</p> <p>Entrepreneur</p> <p>Bank Manager</p> <p>Bank Teller</p> <p>Sales Representative</p> <p>Loan Officer</p>

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**E-COMMERCE  
CIP 52.0208.02**

**PATHWAY DESCRIPTION:** A program that prepares individuals to plan, manage, supervise, and market electronic business operations, products, and services provided online via the Internet. Includes instruction in business administration, information technology, information resources management, web design, computer and Internet law and policy, computer privacy and security, e-trading, insurance, electronic marketing, investment capital planning, enterprise operations, personnel supervision, contracting, and product and service networking.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3-4) **THREE-FOUR CREDITS** from the following:*

- 080716 Principles of Marketing
- 080717 Advanced Marketing
- 080310 Entrepreneurship\*
- 081310 Internet Marketing

*Choose (1) **ONE CREDIT** from the following:*

- 081511 Advertising & Promotions
- 081512 Promotional Applications & Media
- 080708 Marketing Education Internship OR  
080707 Marketing Education Co-op

E-Business Consultant  
Website Designer  
Social Media Consultant  
Telemarketer

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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# MARKETING EDUCATION CAREER PATHWAYS

2016-2017

## MARKETING CIP 52.1401.01

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to undertake and manage the process of developing consumer audiences and moving products from producers to consumers. Includes instruction in buyer behavior and dynamics, principle of marketing research, demand analysis, cost-volume and profit relationships, pricing theory, marketing campaign and strategic planning, market segments, advertising methods, sales operations and management, consumer relations, retailing, and applications to specific products and markets.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080716 Principles of Marketing</li> <li>• 080717 Advanced Marketing</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 081511 Advertising &amp; Promotions</li> <li>• 080310 Entrepreneurship*</li> <li>• 081512 Promotional Applications &amp; Media</li> <li>• 081121 Sports &amp; Event Marketing</li> <li>• 080911 Travel &amp; Tourism Marketing</li> <li>• 080111 Fashion Marketing</li> <li>• 080132 Fashion Marketing Management</li> <li>• 081411 Retail Marketing</li> <li>• 081431 Retail Marketing Management</li> <li>• 060112 Digital Literacy</li> <li>• 080708 Marketing Education Internship <u>OR</u> 080707 Marketing Education Co-op</li> </ul>	<p>Marketing Specialist</p>

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**RETAILING/WHOLESALEING  
CIP 52.1803.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to perform operations associated with retail sales in a variety of settings. Includes instruction in over-the-counter and other direct sales operations in business settings, basic bookkeeping principles, customer service, team/staff leadership and supervision, floor management, and applicable technical skills.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (2-3) **TWO-THREE CREDITS** from the following:*

- 081411 Retail Marketing
- 081431 Retail Marketing Management
- 081511 Advertising & Promotions

*Choose (1-2) **ONE-TWO CREDITS** from the following:*

- 080716 Principles of Marketing
- 080717 Advanced Marketing
- 080310 Entrepreneurship\*
- 080718 Financial Literacy (Interdisciplinary)\*
- 080708 Marketing Education Internship OR  
080707 Marketing Education Co-op

Retail Salesperson  
Retail Buyer  
Restaurant Manager  
Cashier  
Fast Food Worker  
Technical Sales Representative  
Shipping and Receiving Clerk

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**HOSPITALITY, TRAVEL, TOURISM & RECREATION  
CIP 52.1905.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to provide direct retail services to hotel and motel clients and customers in a variety of settings. Includes instruction in the principles of hotel/motel operations, customer sales and assistance operations and techniques, telephone operations, and basic office management.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (3) **THREE CREDITS** from the following:*

- 080716 Principles of Marketing OR  
080910 Principles of Hospitality
- 080717 Advanced Marketing
- 080911 Travel & Tourism Marketing

*Choose (1) **ONE CREDIT** from the following:*

- 080310 Entrepreneurship\*
- 081511 Advertising & Promotions
- 081512 Promotional Applications & Media
- 081121 Sports & Event Marketing
- 081411 Retail Marketing
- 080708 Marketing Education Internship OR  
080707 Marketing Education Co-op

Hotel Desk Clerk  
Hotel Manager  
Concierge  
Retail Salesperson  
Retail Buyer  
Bed and Breakfast  
Proprietor  
Tour Guide  
Travel Agent  
Amusement and  
Recreation Attendant

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**SPORTS MARKETING  
CIP 31.0504.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply business, coaching and physical education principles to the organization, administration and management of athletic programs and teams, fitness/rehabilitation facilities and health clubs, sport recreation services, and related services. Includes instruction in program planning and development; business and financial management principles; sales, marketing and recruitment; event promotion, scheduling and management; facilities management; public relations; legal aspects of sports; and applicable health and safety standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (3) **THREE CREDITS** from the following:*

- 080716 Principles of Marketing
- 080717 Advanced Marketing
- 081121 Sports & Event Marketing

*Choose (1) **ONE CREDIT** from the following:*

- 080310 Entrepreneurship\*
- 081511 Advertising & Promotions
- 081512 Promotional Applications & Media
- 081411 Retail Marketing
- 081431 Retail Marketing Management
- 080708 Marketing Education Internship OR  
080707 Marketing Education Co-op

Sports Marketer  
Recruiter  
Association Manager  
Volunteer Manager

\* Alternate course codes available on pages 2-3 of the [Marketing Education Program of Studies](#)

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**MARKETING EDUCATION CAREER PATHWAYS  
2016-2017**

**BUSINESS/MARKETING EDUCATION  
CIP 13.1310.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to teach career and technical education sales and marketing operations/marketing and distributive education programs at various educational levels.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-3) TWO – THREE CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 060112 Digital Literacy/110110 Computer Literacy</li> <li>• 080716 Principles of Marketing <u>OR</u> 060111 Business Principles and Applications</li> <li>• 331020 Principles of Teaching</li> </ul> <p><i>Choose (1-2) ONE – TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 080717 Advanced Marketing</li> <li>• 080310 Entrepreneurship</li> <li>• 070743 Advanced Computer and Technology Applications</li> <li>• 080311 Business Management (Marketing) <u>OR</u> 060411 Business Management (Business)</li> <li>• 060122 Accounting &amp; Finance Foundations</li> <li>• 080708 Marketing Education Internship <u>OR</u> 080707 Marketing Education Co-op</li> </ul>	<p>Business &amp; Marketing Education Teacher</p> <p>Corporate Trainer</p>

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND MARKETING PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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| <ul style="list-style-type: none"><li>• 080799 Leadership Dynamics</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>             |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                |

# **CONSTRUCTION TECHNOLOGY**

# AIR CONDITIONING TECHNOLOGY CAREER PATHWAYS 2016-2017

## DOMESTIC AIR CONDITIONER AND FURNACE INSTALLER CIP 47.0201.03

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 460828 Refrigeration Fundamentals</li> <li>• 480812 Heat Load/Duct Design</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 460826 Electrical Components</li> <li>• 460824 Cooling and Dehumidification</li> <li>• 460820 Heating and Humidification</li> <li>• 460801 Heat Pump Application</li> <li>• 460880 Co-op I (Air Cond) <u>OR</u> 460883 Internship (Air Cond)</li> </ul>	<p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Environmental Engineer</p> <p>Solar Energy Tech</p> <p>Home Inspector</p> <p>Energy Auditor</p>

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# AIR CONDITIONING TECHNOLOGY CAREER PATHWAYS 2016-2017

## REFRIGERATION MECHANIC CIP 47.0201.04

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 460828 Refrigeration Fundamentals
- 460817 HVAC Electricity
- 460845 Ice Machines

*Choose (1) **ONE CREDIT** from the following:*

- 460826 Electrical Components
- 460822 Commercial Refrigeration
- 460824 Cooling and Dehumidification
- 460880 Co-op I (Air Cond) OR 460883 Internship (Air Cond)

Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Environmental Engineer  
Solar Energy Tech  
Home Inspector  
Energy Auditor

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# AIR CONDITIONING TECHNOLOGY CAREER PATHWAYS 2016-2017

## ENVIRONMENTAL CONTROL SYSTEM SERVICER ASSISTANT CIP 47.0201.05

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. Includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning and refrigeration systems.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDIT:*

- 460828 Refrigeration Fundamentals

*Choose (3) THREE CREDITS from the following:*

- 460817 HVAC Electricity
- 460826 Electrical Components
- 460824 Cooling and Dehumidification
- 460801 Heat Pump Application
- 460820 Heating and Humidification
- 460880 Co-op I (Air Cond) OR 460883 Internship (Air Cond)

Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Environmental Engineer  
Solar Energy Tech  
Home Inspector  
Energy Auditor

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND AIRCONDITIONING TECHNOLOGY PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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460806 Green Awareness/Energy Management
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499930 Industrial Safety (.5 credit)
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460846 Journeyman Preparation (.5 credit)
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460804 Residential Energy Auditor Prep
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460847 Sheet Metal Fabrication
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Career Options
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JAG Courses
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**BUILDING AND APARTMENT MAINTENANCE  
CAREER PATHWAYS  
2016-2017**

**RESIDENTIAL MAINTENANCE CARPENTER ASSISTANT  
CIP 46.0401.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings and mobile homes. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 460241 Introduction to Building &amp; Apartment Maintenance</li> <li>• 460220 Residential Maintenance Carpentry</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 460818 Residential HVAC Maintenance</li> <li>• 460222 Residential Interior Maintenance</li> <li>• 460114 Residential Maintenance Masonry</li> <li>• 460333 Residential Maintenance Wiring</li> <li>• 460513 Residential Maintenance Plumbing</li> <li>• 460229 Co-op I (BAM) <u>OR</u> 460232 Internship (BAM)</li> </ul>	<p>Bricklayer/Stonemason</p> <p>Concrete Mason</p> <p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Property Manager</p>

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**BUILDING AND APARTMENT MAINTENANCE  
CAREER PATHWAYS  
2016-2017**

**BRICKLAYER ASSISTANT - BAM  
CIP 46.0101.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings and mobile homes. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 460112 Introductory Masonry
- 460116 Intermediate Masonry
- 460223 Residential Maintenance Masonry
- 499930 Industrial Safety\* AND 499920 Basic Blueprint Reading\*
- 460229 Co-op I (BAM) OR 460232 Internship (BAM)

Note: (\*) Indicates half-credit course

Bricklayer/Stonemason  
Concrete Mason  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Property Manager

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**BUILDING AND APARTMENT MAINTENANCE  
CAREER PATHWAYS  
2016-2017**

**ENVIRONMENTAL CONTROL SYSTEM SERVICER ASSISTANT  
CIP 47.0201.05**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings and mobile homes. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) **ONE CREDIT:***

- 460828 Refrigeration Fundamentals

*Choose (3) **THREE CREDITS** from the following:*

- 460817 HVAC Electricity
- 460826 Electrical Components
- 460824 Cooling and Dehumidification
- 460801 Heat Pump Application
- 460820 Heating and Humidification
- 460229 Co-op I (BAM) OR 460232 Internship (BAM)

Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Environmental Engineer  
Solar Energy Tech  
Home Inspector  
Energy Auditor

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**COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND  
BUILDING & APARTMENT MAINTENANCE (BAM) PATHWAY(s)**

Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

499920 Basic Blueprint Reading

499925 Basic Troubleshooting

499930 Industrial Safety (.5 credit)

460804 Residential Energy Auditor Prep

460847 Sheet Metal Fabrication

Career Options

JAG Courses

**CONSTRUCTION CARPENTRY TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**CARPENTER ASSISTANT  
CIP 46.0201.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS:*

- 460201 Introduction to Construction Technology
- 460212 Floor and Wall Framing

*Choose (2) TWO CREDITS from the following:*

- 460213 Ceiling and Roof Framing
- 460217 Construction Prints\* AND 499930 Industrial Safety\*
- 460214 Site Layout and Foundations
- 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry)

Note: (\*) Indicates half-credit course

Carpenter  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Drywall Installer

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**CONSTRUCTION CARPENTRY TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**CONSTRUCTION FORMS ASSISTANT  
CIP 46.0201.03**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 460201 Introduction to Construction Technology</li> <li>• 460218 Construction Forms</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 460212 Floor and Wall Framing</li> <li>• 460213 Ceiling and Roof Framing</li> <li>• 460214 Site Layout and Foundations</li> <li>• 460242 Co-op (Carpentry) <u>OR</u> 460245 Internship (Carpentry)</li> </ul>	<p>Carpenter</p> <p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Drywall Installer</p> <p>Flooring Installer</p>

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**CONSTRUCTION CARPENTRY TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**FINISH CARPENTERS ASSISTANT  
CIP 46.0201.05**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 460201 Introduction to Construction Technology
- 460212 Floor and Wall Framing
- 460219 Exterior and Interior Finish

*Choose (1) **ONE CREDIT** from the following:*

- 460209 Cabinet Construction and Installation
- 460217 Construction Prints\* AND 499930 Industrial Safety\*
- 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry)

Note: (\*) Indicates half-credit course

Carpenter  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Flooring Installer  
Furniture Finisher  
Production Woodworker

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**CONSTRUCTION CARPENTRY TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**RESIDENTIAL CARPENTER ASSISTANT  
CIP 46.0201.02**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to lay out, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Includes instruction in technical mathematics, framing, construction materials and selection, job estimating, blueprint reading, foundations and roughing-in, finish carpentry techniques, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS:*

- 460201 Introduction to Construction Technology
- 460212 Floor and Wall Framing

*Choose (2) TWO CREDITS from the following:*

- 460213 Ceiling and Roof Framing
- 460214 Site Layout and Foundations
- 460219 Exterior and Interior Finish
- 460209 Cabinet Construction and Installation
- 460242 Co-op (Carpentry) OR 460245 Internship (Carpentry)

Carpenter  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Drywall Installer  
Flooring Installer  
Production Woodworker

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**CONSTRUCTION CARPENTRY TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**CARPENTRY -- TRACK  
CIP 46.0201.99**

**PATHWAY DESCRIPTION:** The Carpentry TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity enter a Registered Apprenticeship training program upon graduation. This *Skilled Trades* TRACK does not require an employer partner. Students must successfully complete the four course sequence, 8 safety modules and an end of program assessment. Upon conclusion, the instructor will fill out a completion form and submit to OCTE. After being processed, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Labor Cabinet. This certification will be recognized by participating partners for an interview and possible credit upon placement. Credit is at the discretion of the training organization. For more information or a list of participating organizations, please visit: [http://education.ky.gov/CTE/cter/Pages/Carp\\_Track.aspx](http://education.ky.gov/CTE/cter/Pages/Carp_Track.aspx)

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 460201 Introduction to Construction Technology
- 460212 Floor and Wall Framing
- 460213 Ceiling and Roof Framing
- 460214 Site Layout and Foundations

Carpenter  
Construction  
Tradesperson

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND CONSTRUCTION/CARPENTRY TECHNOLOGY PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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- |  |
|--|
| <ul style="list-style-type: none"><li>• Career Options</li></ul> |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>    |

# ELECTRICAL TECHNOLOGY CAREER PATHWAYS 2016-2017

## ELECTRICIAN ASSISTANT CIP 46.0302.01

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR OR MORE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 460312 Electrical Construction I</li> <li>• 460313 Electrical Construction II</li> <li>• 460316 Circuits I</li> <li>• 460319 Circuits II</li> <li>• 499930 Industrial Safety* <u>AND</u> 460339 National Electrical Code*</li> <li>• 460345 Co-op (Electrical) <u>OR</u> 460348 Internship (Electrical)</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Electrical Engineer</p> <p>Electrical Engineering Tech</p> <p>Electrician</p>

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# ELECTRICAL TECHNOLOGY CAREER PATHWAYS 2016-2017

## INDUSTRIAL ELECTRICIAN ASSISTANT CIP 46.0302.02

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR OR MORE CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 460312 Electrical Construction I</li> <li>• 460316 Circuits I</li> <li>• 460319 Circuits II</li> <li>• 460331 Electrical Motor Controls</li> <li>• 499930 Industrial Safety* <u>AND</u> 460339 National Electrical Code*</li> <li>• 460345 Co-op (Electrical) <u>OR</u> 460348 Internship (Electrical)</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Electrical Engineer</p> <p>Electrical Engineering Tech</p> <p>Electrician</p>

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# ELECTRICAL TECHNOLOGY CAREER PATHWAYS 2016-2017

## RESIDENTIAL ELECTRICIAN CIP 46.0302.03

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR OR MORE CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 460312 Electrical Construction I</li> <li>• 499925 Basic Troubleshooting</li> <li>• 460316 Circuits I</li> <li>• 499930 Industrial Safety* <u>AND</u> 460339 National Electrical Code*</li> <li>• 460345 Co-op (Electrical) <u>OR</u> 460348 Internship (Electrical)</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Construction Laborer</p> <p>Construction Manager</p> <p>Construction Tradesperson</p> <p>Electrical Engineer</p> <p>Electrical Engineering Tech</p> <p>Electrician</p>

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# ELECTRICAL TECHNOLOGY CAREER PATHWAYS 2016-2017

## CONSTRUCTION - ELECTRICAL -- TRACK CIP 46.0302.99

**PATHWAY DESCRIPTION:** The Electrical TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity enter a Registered Apprenticeship training program upon graduation. This *Skilled Trades* TRACK does not require an employer partner. Students must successfully complete the four course sequence, 8 safety modules and an end of program assessment. Upon conclusion, the instructor will fill out a completion form and submit to OCTE. After being processed, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Labor Cabinet. This certification will be recognized by participating partners for an interview and possible credit upon placement. Credit is at the discretion of the training organization. For more information or a list of participating organizations, please visit: [http://education.ky.gov/CTE/cter/Pages/Elec\\_TRACK.aspx](http://education.ky.gov/CTE/cter/Pages/Elec_TRACK.aspx)

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 460312 Electrical Construction I
- 460313 Electrical Construction II
- 460316 Circuits I
- 460319 Circuits II

Electrical Engineer  
Electrical Engineering  
Tech  
Electrician

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND ELECTRICAL TECHNOLOGY CAREER PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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499920 Basic Blueprint Reading
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460342 Renewable Energy Systems
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460323 Rotating Machinery
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460325 Rotating Machinery Electrical Motor Controls
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460377 Special Problems – Electrical Technology
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460340 Sustainable Energy Systems
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460305 Transformers
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Career Options
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JAG Courses
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**MASONRY TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**BRICKLAYER ASSISTANT  
CIP 46.0101.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills in the laying and/or setting of exterior brick, concrete block, hard tile, marble and related materials, using trowels, levels, hammers, chisels, and other hand tools. Includes instruction in technical mathematics, blueprint reading, structural masonry, decorative masonry, foundations, reinforcement, mortar preparation, cutting and finishing, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 460112 Introductory Masonry
- 460116 Intermediate Masonry
- 499930 Industrial Safety\* AND 499920 Basic Blueprint Reading\*
- 460180 Co-op (Masonry) OR  
460183 Internship (Masonry)

Note: (\*) Indicates half-credit course

Bricklayer/Stonemason  
Concrete Mason  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson

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**MASONRY TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**MASON APPRENTICE  
CIP 46.0101.02**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills in the laying and/or setting of exterior brick, concrete block, hard tile, marble and related materials, using trowels, levels, hammers, chisels, and other hand tools. Includes instruction in technical mathematics, blueprint reading, structural masonry, decorative masonry, foundations, reinforcement, mortar preparation, cutting and finishing, and applicable codes and standards.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR OR MORE CREDITS:***

- 460112 Introductory Masonry
- 460116 Intermediate Masonry
- 460119 Concrete Finishing
- 460180 Co-op (Masonry) OR 460183 Internship (Masonry)
- 460113 Advanced Masonry
- 460117 Anchors and Reinforcement

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Bricklayer/Stonemason  
Concrete Mason  
Construction Laborer  
Construction Manager  
Construction  
Tradesperson

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND MASONRY TECHNOLOGY CAREER PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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460109 Basic Bricklaying
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460110 Basic Blocklaying
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460118 Fireplace Construction
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460179 Special Problems (Masonry)
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Career Options
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JAG Courses
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**PLUMBING TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**PLUMBER ASSISTANT  
CIP 46.0501.02**

**PATHWAY DESCRIPTION:** A program that prepares individuals to practice as licensed plumbers by applying technical knowledge and skills to lay out, assemble, install, and maintain piping fixtures and systems for steam, natural gas, oil, hot water, heating, cooling, drainage, lubricating, sprinkling, and industrial processing systems in home and business environments. Includes instruction in source determination, water distribution, waste removal, pressure adjustment, basic physics, technical mathematics, blueprint reading, pipe installation, pumps, welding and soldering, plumbing inspection, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS:*

- 460511 Introduction to Plumbing
- 460513 Basic Plumbing Skills

*Choose (2) TWO CREDITS from the following:*

- 460512 Plumbing Systems
- 460514 Bathroom Install
- 460515 Kitchen Install
- 460518 Co-op (Plumbing) OR  
460521 Internship (Plumbing)

Construction Laborer  
Construction Manager  
Construction  
Tradesperson  
Plumber  
Pipefitter

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<p style="text-align: center;"><b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND PLUMBING TECHNOLOGY CAREER PATHWAY(S)</b></p>
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<p>Upon completion of a pathway, additional coursework to enhance student learning is encouraged.</p>
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<p>Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.</p>
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 499930 Industrial Safety (.5 credit)</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>                       |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                          |

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# **ENGINEERING & TECHNOLOGY EDUCATION**

**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**MANUFACTURING ENGINEERING TECHNOLOGY TECHNICIAN  
CIP 15.0613.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles, mathematical and scientific principles to the design, development and operational evaluation of integrated systems for managing industrial production processes, just-in-time manufacturing, industrial quality control, automation, cost analysis, and technical skills to the identification and resolution of production problems in the manufacture of products. Includes instruction in machine operations, production line operations, engineering analysis, systems analysis, instrumentation, physical controls, automation, computer-aided manufacturing (CAM), manufacturing planning, quality control, and informational infrastructure.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS: from the following:</i></p> <ul style="list-style-type: none"> <li>• 210107 Foundations of Technology</li> <li>• 210232 Basic Electricity &amp; Energy Systems</li> <li>• 210224 Principles of Engineering &amp; Technology</li> <li>• 210225 Introduction to Manufacturing &amp; Manufacturing Systems</li> <li>• 210230 Fundamentals of Mechatronics</li> <li>• 210136 Advanced Technology for Design &amp; Productions (<b>SREB</b>)</li> <li>• 210137 Systems of Advanced Technology (<b>SREB</b>)</li> </ul> <p><i>Choose (2) TWO CREDITS from the Following:</i></p> <ul style="list-style-type: none"> <li>• 210134 Material Process Technology</li> <li>• 210135 Production Technology</li> <li>• 210221 Fundamentals of Engineering Design I</li> <li>• 210238 Foundations of Robotics</li> <li>• 210290 Special Topics in Engineering</li> <li>• 210330 Engineering &amp; Technology Co-Op <u>OR</u> 210331 Engineering &amp; Technology Internship</li> </ul> <p style="text-align: center;">Note: (SREB) courses require an agreement between the Southern Region Education Board and the District.</p>	<p>Engineering Technology Instructor</p> <p>Production Woodworker</p> <p>Manufacturing Manager</p> <p>Manufacturing Worker</p> <p>Industrial Engineer</p> <p>Electronics Assembler</p> <p>Industrial Engineer</p> <p>Industrial Technician</p> <p>Quality Controller</p>

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**PROJECT LEAD THE WAY (PLTW) ENGINEERING  
CIP 14.0101.01**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to apply mathematical and scientific principles to solve a wide variety of practical problems in industry, social organization, public works, and commerce. Includes instruction in undifferentiated and individualized programs in engineering.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS:*

- 219901 Introduction to Engineering Design (*PLTW*)
- 219902 Principles of Engineering (*PLTW*)

*Choose (2) TWO CREDITS from the following:*

- 219903 Digital Electronics (*PLTW*)
- 219904 Computer Integrated Manufacturing (*PLTW*)
- 219905 Civil Engineering & Architecture (*PLTW*)
- 219906 Engineering Design & Development (*PLTW*)
- 219907 Aerospace Engineering (*PLTW*)
- 219908 Biotechnical Engineering (*PLTW*)
- 219917 Special Topics in Engineering (*PLTW*)
- 110730 Computer Science & Software Engineering (*PLTW*)
- 210330 Engineering & Technology Co-Op OR
- 210331 Engineering & Technology Internship

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Engineering Technology Instructor  
Production Woodworker  
Manufacturing Manager  
Manufacturing Worker  
Electronics Assembler  
Industrial Engineer  
Industrial Technician  
Quality Controller  
Architect  
Aerospace Engineer  
Interior Designer  
Nuclear Engineer  
Electrical Engineer  
Electronics Engineer  
Civil Engineer  
Computer Hardware Engineer

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**AERONAUTICS & AEROSPACE  
Flight & Aeronautics  
CIP 49.0102.00**

**PATHWAY DESCRIPTION:** Allows student to complete what is considered the first phase of aviation training leading to a commercial pilot license. They will gain technical knowledge and skills to the flying and/or navigation of commercial passenger and cargo, agricultural, public service, corporate and fixed wing aircraft. Includes instruction in principles of aircraft design and performance, aircraft flight systems and controls, flight crew operations and procedures, radio communications, navigation procedures and systems, airways safety and traffic regulations, and governmental rules and regulations pertaining to piloting aircraft.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 210226 Introduction to Aerospace
- 210233 Fundamentals of Aviation Science I
- 210234 Aviation Science II
- 210237 Introduction to Commercial Aviation Science
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Aerospace Engineer  
Aerospace Technician  
Private Pilot  
Commercial Pilot  
Crew Chief  
Flight Instructor  
Commercial Aviator  
Military Aviator  
Military Navigator

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**AERONAUTICS & AEROSPACE  
Aeronautical Engineering  
CIP 14.0201.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing aircraft, spacecraft and their systems. The program provides students with a foundation of knowledge and technically oriented experiences in the study of Aerospace Technologies, its effect upon our lives, and the choosing of an occupation. Includes instruction in aircraft/spacecraft systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance, and report preparation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 210226 Introduction to Aerospace
- 210233 Fundamentals of Aviation Science I
- 210229 Fundamentals of Aeronautical Engineering OR  
219907 Aerospace Engineering (*PLTW*)
- 210290 Special Topics in Engineering
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Astronaut  
Aerospace Engineer  
Aerospace Technician  
Mechanical Engineer  
Aircraft Mechanic  
Crew Chief  
Aircraft Manufacturing  
Manager  
Aircraft Structural  
Assembler  
Quality Control  
Inspector  
Mechanical Design  
Engineer

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**AERONAUTICS & AEROSPACE  
Space Systems Engineering  
CIP 14.0201.02**

**PATHWAY DESCRIPTION:** An instructional program in astronautics designed to develop basic knowledge of space systems and to gain practical experience in designing, fabricating, and testing space type experiments. Students will learn and understand the constraints on device design to operate in the LEO (Low Earth Orbit) space environment. Students will also get hands-on experience in a laboratory environment and in the safe use of shop equipment.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p style="padding-left: 40px;"><i>Complete (4) <b>FOUR CREDITS</b></i></p> <ul style="list-style-type: none"> <li>• 210226 Introduction to Aerospace</li> <li>• 210235 Introduction to Space Systems Engineering I</li> <li>• 210236 Space Systems Engineering II</li> <li>• 210229 Fundamentals of Aeronautical Engineering <u>OR</u> 219907 Aerospace Engineering (<b>PLTW</b>) <u>OR</u> 219903 Digital Electronics (<b>PLTW</b>)</li> </ul> <p style="padding-left: 40px;">Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to <a href="#">PLTW Program Requirements</a> for further information.</p>	<p>Astronaut</p> <p>Aerospace Engineer Aerospace Technician</p> <p>Mechanical Engineer</p> <p>Mechanical Design Engineer</p> <p>Electronics Engineer</p> <p>Electronics Technician</p> <p>Mission Planner</p> <p>Orbit Analyst</p> <p>Satellite Flight Engineer</p>

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**AERONAUTICS & AEROSPACE  
Aircraft Maintenance Technician  
CIP 47.0607.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all aircraft components other than engines, propellers, avionics, and instruments. Includes instruction in layout and fabrication of sheet metal, fabric, wood, and other materials into structural members, parts, and fittings, and replacement of damaged or worn parts such as control cables and hydraulic units.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS***

- 210226 Introduction to Aerospace
- 210233 Fundamentals of Aviation Science I
- 210139 Introduction to Aircraft Maintenance Technology I

*Choose (1) **ONE CREDIT** from the following:*

- 210234 Aviation Science II
- 210229 Fundamentals of Aeronautical Engineering OR  
219907 Aerospace Engineering (*PLTW*)
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Note: To gain FAA work experience and training requirements students must log hours and work with approved FAA (AP or IA).

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Aircraft Maintenance Technician  
(AP) Aircraft & Power Plant Mechanic  
(IA) Inspector Authorization  
(ASI) Aviation Safety Inspector  
Crew Chief

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**ENGINEERING & TECHNOLOGY DESIGN  
15.1302.00**

**PATHWAY DESCRIPTION:** This program of study is designed for students interested in the various disciplines of engineering and engineering technology. The sequences of courses will provide students with the opportunity to develop critical thinking skills and understanding of engineering concepts. Students then apply these skills in conjunction with the multi-step engineering design process to solve real-world problems. Includes instruction in engineering graphics, two-dimensional and three-dimensional engineering design, solids modeling, engineering animation, computer-aided drafting (CAD), computer-aided design (CADD), and auto-CAD techniques.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 210138 Mechanical & Technical Design
- 210221 Fundamentals of Engineering Design I
- 210108 Technological Design

*Choose (2) TWO CREDITS from the following:*

- 210222 Engineering Design II
- 210109 Technological Issues and Impacts
- 210117 Advanced Design Applications
- 210290 Special Topics in Engineering
- 210224 Principles of Engineering & Technology
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Engineering Technology  
Instructor  
CAD Engineer  
CAD Technician/Drafter  
Mold Designer  
Mechanical Designer  
Industrial Material  
Handling Designer  
Mechanical Engineer

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**CIVIL ARCHITECTURE & CONSTRUCTION TECHNOLOGY  
15.0101.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of architects, engineers and planners engaged in designing and developing buildings, urban complexes, and related systems. Includes instruction in design testing procedures, building site analysis, model building and computer graphics, structural systems testing, analysis of prototype mechanical and interior systems, report preparation, basic construction and structural design, architectural rendering, architectural-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 210138 Mechanical & Technical Design OR  
210221 Fundamentals of Engineering Design I
- 210223 Fundamentals of Architectural & Civil Engineering OR  
219905 Civil Engineering & Architecture (*PLTW*)

*Choose (2) TWO CREDITS from the following:*

- 219140 Architectural Design & Civil Engineering II
- 210141 Fundamentals of Building Construction Technologies
- 210117 Advanced Design Applications
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Note: (*PLTW*) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Engineering Technology Instructor  
Architect  
Interior Designer  
Home Improvement Contractor  
Carpenter  
Construction Laborer  
Construction Manager  
Construction Supervisor  
Project Manager  
Building Inspector  
Drafter  
Renovator  
Quality Controller  
Property Assessor  
Building Superintendent

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**POWER & ENERGY MANAGEMENT SYSTEMS TECHNOLOGY  
(Sustainability & Energy Application)  
CIP 15.0503.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing energy-efficient systems or monitoring energy use. The content includes activities to develop knowledge and skill in, but is not limited to the study of power systems and the kinds and sources of energy, repair, service, and maintenance of small internal-combustion engines used on portable power equipment such as generators, electrical motors, generators, and wind turbines. The content and activities will also include the study of safety, and leadership skills.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2-3) TWO-THREE CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 210341 Foundations of Energy</li> <li>• 210232 Basic Electricity &amp; Energy Systems</li> <li>• 210242 Introduction to Alternative Energy I</li> </ul> <p><i>Choose (1-2) ONE-TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 210243 Alternative Energy II</li> <li>• 210244 Global Energy Issues</li> <li>• 210142 Power &amp; Energy Equipment Technology <u>OR</u> 210290 Special Topics in Engineering <u>OR</u> 210330 Engineering &amp; Technology Co-Op <u>OR</u> 210331 Engineering &amp; Technology Internship</li> </ul>	<p>Engineering Technology Instructor</p> <p>Outdoor Power Equipment Technician</p> <p>Small Engine Mechanic</p> <p>Solar Energy Technician</p> <p>Wind Power Technician</p> <p>Energy Auditor</p> <p>Wind Power Technician</p> <p>Energy Auditor</p> <p>Electrical Mechanical Technician</p> <p>Power Plant Technician</p> <p>Turbine Technician</p> <p>Energy Analyst</p> <p>Electrical Engineering</p> <p>Mechanical Engineering</p>

**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2015-2016**

**POWER & ENERGY MANAGEMENT SYSTEMS TECHNOLOGY  
(Energy Management)  
CIP 15.0503.02**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing energy-efficient systems or monitoring energy use. Includes instruction in principles of energy conservation, instrumentation calibration, monitoring systems and test procedures, energy loss inspection procedures, energy conservation techniques, and report preparation and problem solving skills.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4)FOUR CREDITS from the following:*

- TBA - Energy I: *Energy Basics*
- TBA - Energy II: *Electric Power Generation & Distribution*
- TBA - Energy III: *Careers & Emerging Technologies in Energy*
- TBA - Sustainability Management

Note: This Pathway requires partnership with a post-secondary institution to enable student achievement of the industry certification which can equate to post-secondary credit.

**New & Emerging Pathway**

Engineering Technology Instructor  
Outdoor Power Equipment Technician  
Small Engine Mechanic  
Solar Energy Technician  
Wind Power Technician  
Energy Auditor  
Wind Power Technician  
Energy Auditor  
Electrical Mechanical Technician  
Power Plant Technician  
Turbine Technician  
Energy Analyst  
Electrical Engineering  
Mechanical Engineering

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**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**ROBOTICS & AUTOMATION  
15.0405.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing and using robots. Includes instruction in the principles of robotics, design and operational testing, system maintenance and repair procedures, robot computer systems and control language, specific system types and applications to specific industrial tasks, and report preparation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 210238 Foundations of Robotics
- 210239 Robotics Design Essentials and Systems

*Choose (2) TWO CREDITS from the following:*

- 210232 Basic Electricity & Energy Systems
- 210230 Fundamentals of Mechatronics OR  
219902 Principles of Engineering (*PLTW*)
- 210240 Robotics Applications
- 210221 Fundamentals of Engineering Design I OR  
219901 Introduction to Engineering Design (*PLTW*)
- 210290 Special Topics in Engineering
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Note: (*PLTW*) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Engineering Technology Instructor  
Solar Energy Technician  
Wind Power Technician  
Energy Auditor  
Electrical Mechanical Technician  
Power Plant Technician  
Turbine Technician  
Energy Analyst  
Electrical Engineering  
Mechanical Engineering

**ENGINEERING & TECHNOLOGY EDUCATION  
CAREER PATHWAYS  
2016-2017**

**GRAPHIC & DIGITAL COMMUNICATIONS  
10.0105.00**

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to function as workers and managers within communications industries. Includes instruction in business economics; basic management; principles of interpersonal and mediated communications; radio, television, and digital media production; and related aspects of technology and communications systems.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) **TWO CREDITS** from the following:*

- 060112 Digital Literacy
- 210138 Mechanical & Technical Design OR  
210221 Fundamentals of Engineering Design I

*Choose (2) **TWO CREDITS** from the following:*

- 210133 Graphic Communications
- 210118 Advanced Technological Application
- 210111 Special Problems in Technology
- 210330 Engineering & Technology Co-Op OR  
210331 Engineering & Technology Internship

Technology Teacher  
Communications  
Technician  
Graphic Designer  
Desktop Publisher  
Web Designer

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# **FAMILY AND CONSUMER SCIENCES**

**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**CONSUMER & FAMILY MANAGEMENT  
CIP Code 19.0403.00**

**PATHWAY DESCRIPTION:** The Consumer and Family Management pathway helps students develop skills associated with early career employment opportunities and rigorous education programs that prepare for this level of the career ladder. The knowledge and skills validated span across a broad range of Family and Consumer Sciences content areas and are central to career areas involving human services, consumer services/protection/advising, education and training as well as social and community services.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

Marriage and Family  
Therapist

*Complete (3) **THREE CREDITS** from the following:*

Family and Consumer  
Scientist

- 200113 FACS Essentials AND/OR  
200161 FACS Essentials Health\*
- 201010 Money Skills OR  
201011 Money Skills for Math OR  
201015 Consumer Economics for SS credit
- 200171 Relationships\*\*
- 200441 Foods & Nutrition

Gerontologist

Abuse/Crisis Counselor

*Choose (1) **ONE CREDIT** from the following:*

- 200226 Middle to Late Lifespan Development\*\*
- 200173 Parenting\*\*

Personal Financial  
Planner

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full  
(1) credit course

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**CULINARY & FOOD SERVICES  
CIP Code 12.0500.00**

**PATHWAY DESCRIPTION:** The Culinary & Food Service pathway addresses a skill set necessary for success in the culinary industry. The courses in this pathway will help students develop skills in early career ladder positions and promote continuing education at the post-secondary level preparing for careers associated with restaurants, institutional food service, hospitality and catering, as well as food and beverage operations.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 200441 Foods & Nutrition
- 200411 Culinary Arts I
- 200412 Culinary Arts II

*Choose (1) **ONE CREDIT** from the following:*

- 200113 FACS Essentials AND/OR  
200161 FACS Essentials Health\* OR
- 200442 Advanced Foods & Nutrition\*\*
- 200478 Internship: Culinary Arts
- 200409 Co-op: Culinary Arts

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR  
a full (1) credit course

Chef/Cook  
Baker  
Entrepreneur  
Food Inspector  
Butcher

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**EARLY CHILDHOOD EDUCATION  
CIP Code 13.1210.00**

**PATHWAY DESCRIPTION:** The Early Childhood Education pathway will address a skill set necessary for success in early childhood education so that individuals can teach students ranging in age from infancy through eight years (grade three), depending on the school system or state regulations. This pathway is targeted for individuals preparing for careers related to early childhood education, such as those associated with child care, teaching, community-based children's programs, social services or counseling for children, and after-school programs.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

Early Childhood  
Educator  
  
Psychologist  
  
Nanny  
  
Pediatrician  
  
Midwife

*Complete (3) **THREE CREDITS:***

- 200223 Early Lifespan Development\*\*
- 200261 Child Development Services I
- 200262 Child Development Services II

*Choose (1) **ONE CREDIT***

- 200113 FACS Essentials AND/OR  
200161 FACS Essentials Health\*
- 331020 Principles of Teaching
- 200171 Relationships\*\*
- 200173 Parenting\*\*
- 200210 Co-op: Early Childhood Education

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**FASHION & INTERIOR DESIGN  
CIP Code 50.0407.00**

**PATHWAY DESCRIPTION:** The Fashion and Interior Design pathway will address a skill set necessary for success in the fashion industry as well as a career in the residential housing and furnishings industry. This pathway targets individuals who are interested in pursuing careers in the following areas: retail and wholesale buying, apparel and textile development and production, fashion and textile design, and visual merchandising as well as public and private sector housing programs, residential property and facility management, real estate, retail home furnishings, or home decorating and staging.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 200113 FACS Essentials</li> <li>• 200821 Fashion and Interior Design I</li> <li>• 200825 Fashion and Interior Design II</li> </ul> <p><i>Choose (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 201010 Money Skills <u>OR</u> 201011 Money Skills for Math</li> <li>• 200801 Internship: Fashion &amp; Interior Design</li> <li>• 200810 Co-op: Fashion &amp; Interior Design</li> </ul> <p>Note: (*) Indicates half-credit (.5) course</p> <p>Note: (**) Indicates course can be half-credit (.5) <u>OR</u> a full (1) credit course</p>	<p>Fashion Designer</p> <p>Interior Designer</p> <p>Fashion Retailer</p> <p>Clothing Manufacturer</p> <p>Furniture Designer</p>

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**FOOD SCIENCE & DIETETICS  
CIP Code 51.3199.00**

**PATHWAY DESCRIPTION:** The Food Science & Dietetics pathway addresses competencies and a skill set necessary for success as a pre-professional in a career with a substantial focus on food science. It will facilitate employment in early career ladder positions and promote continuing education at the post-secondary level in career areas involving: food science, food safety, food quality, food technology, or food preservation and packaging.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 200441 Foods & Nutrition
- 200442 Advanced Foods & Nutrition\*\*
- 200415 Nutritional Food Science
- 200414 Fundamentals of Dietetics

*Choose (1) **ONE CREDIT** from the following:*

- 200113 FACS Essentials AND/OR  
200161 FACS Essentials Health\*
- 010702 Food Science & Technology
- 304526 AP Chemistry OR  
302646 AP Biology

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Dietitian  
Food Scientist  
Flavor Chemist  
Food Engineer  
Food Safety Inspector

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**FUNDAMENTALS OF TEACHING  
CIP Code 13.1308.00**

**PATHWAY DESCRIPTION:** The Fundamentals of Teaching pathway will facilitate employment in early career ladder positions and promote continuing education at the post-secondary level preparing for careers associated with education and training in public and private school programs, elementary, middle, and secondary schools, after-school programs; higher education, non-profit, and corporate settings.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED CAREER  
TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 200223 Early Lifespan Development\*\*
- 200226 Middle to Late Lifespan Development\*\*
- 331020 Principles of Teaching

*Choose (1) **ONE CREDIT** from the following:*

- 200199 FACS Leaders at Work
- 200113 FACS Essentials
- 200171 Relationships\*\*

Note: (\*\*) Indicates course can be half-credit (.5)  
OR a full (1) credit course

Teacher – all levels and areas  
Teacher Assistant  
Principal  
Superintendent  
School Counselor

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**FAMILY AND CONSUMER SCIENCES CAREER PATHWAYS  
2016-2017**

**HOSPITALITY SERVICES  
CIP Code 52.0905.00**

**PATHWAY DESCRIPTION:** The Hospitality Services pathway prepares individuals to plan, manage, and market restaurants, food services in hospitality establishments, food service chains and franchise networks, and restaurant supply operations. Includes instruction in hospitality administration, food services management, wholesale logistics and distribution, franchise operations, business networking, personnel management, culinary arts, business planning and capitalization, food industry operations, marketing and retailing, business law and regulations, finance, and professional standards and ethics.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 200442 Advanced Foods & Nutrition\*\*
- 200610 Principles of Hospitality
- 200641 Specialized Services in Hospitality
- 200113 FACS Essentials

*Choose (1) **ONE CREDIT:***

- 200441 Foods & Nutrition
- 080716 Principles of Marketing
- 200601 Internship: Hospitality Services
- 200690 Co-op: Hospitality Services

Note: (\*\*) Indicates course can be half-credit (.5)

OR a full (1) credit course

Restaurant/Hotel  
Manager  
  
Event Planner  
  
Travel Agent  
  
Caterer  
  
Concierge

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND FAMILY AND CONSUMER SCIENCES CAREER PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 200199 FACS Leaders at Work</li></ul>            |
| <ul style="list-style-type: none"><li>• 200499 Special Topics in Culinary Arts</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>                         |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                            |

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## **HEALTH SCIENCES**

# HEALTH SCIENCES CAREER PATHWAYS 2016-2017

## ALLIED HEALTH CIP 51.0000.01

**PATHWAY DESCRIPTION:** A general, introductory, undifferentiated, or joint program in health services occupations that prepares individuals for either entry into specialized training programs or for a variety of concentrations in the allied health area. Includes instruction in the basic sciences, research and clinical procedures, and aspects of the subject matter related to various health occupations.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170501 Allied Health Core Skills

*Choose (1) **ONE CREDIT** from the following:*

- 170169 Medical Math\*\*
- 170167 Body Structures and Functions OR  
302631 Anatomy (Science Course)
- 170550 Internship: Allied Health

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Doctor  
Nurse  
Pharmacist  
Physical Therapist  
Psychologist  
Radiologist  
Surgeon  
Veterinarian

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## PLTW BIOMEDICAL SCIENCES

CIP 26.0102.00

**PATHWAY DESCRIPTION:** A general, program that focuses on the integrative scientific study of biological issues related to health and medicine, or a program in one or more of the biomedical sciences that is undifferentiated as to title. Includes instruction in any of the basic medical sciences at the research level; biological science research in biomedical faculties; and general studies encompassing a variety of the biomedical disciplines.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 170701 Principles of Biomedical Science
- 170702 Human Body Systems
- 170703 Medical Interventions
- 170704 Biomedical Innovations

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Biologist  
Biomedical Engineer  
Biotechnologist  
Coroner  
Doctor  
Forensic Scientist  
Nurse  
Pharmacist  
Surgeon

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## DENTAL TECHNOLOGY

CIP 51.0601.01

**PATHWAY DESCRIPTION:** A program that prepares individuals to provide patient care, take dental radiographs (x-ray photographs), prepare patients and equipment for dental procedures, and discharge office administrative functions under the supervision of dentists and dental hygienists. Includes instruction in medical record-keeping, general office duties, reception and patient intake, scheduling, equipment maintenance and sterilization, basic radiography, pre- and post-operative patient care and instruction, chairside assisting, taking tooth and mouth impressions, and supervised practice.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170552 Internship: Dental Assistant

*Choose (1) **ONE CREDIT** from the following:*

- 170167 Body Structures and Functions OR  
302631 Anatomy (Science Course)
- 170501 Allied Health Core Skills

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Dentist  
Dental Assistant  
Dental Lab Tech

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## EKG TECHNOLOGY/TECHNICIAN

**CIP 51.0902.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the supervision of physicians and nurses, to administer EKG and ECG diagnostic examinations and report results to the treatment team. Includes instruction in basic anatomy and physiology, the cardiovascular system, medical terminology, cardiovascular medications and effects, patient care, EKG and ECG administration, equipment operation and maintenance, interpretation of cardiac rhythm, patient record management, and professional standards and ethics.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170555 EKG Technician

*Choose (1) **ONE CREDIT** from the following:*

- 170167 Body Structures and Functions OR  
302631 Anatomy (Science Course)

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Diagnostic Medical  
Sonographer  
  
Medical Assistant  
  
Medical Lab Tech  
  
Nurse  
  
Radiologist

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## EMERGENCY MEDICAL TECHNICIAN

CIP 51.0904.01

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the remote supervision of physicians, to recognize, assess, and manage medical emergencies in prehospital settings and to supervise Ambulance personnel. Includes instruction in basic, intermediate, and advanced EMT procedures; emergency surgical procedures; medical triage; rescue operations; crisis scene management and personnel supervision; equipment operation and maintenance; patient stabilization, monitoring, and care; drug administration; identification and preliminary diagnosis of diseases and injuries; communication and computer operations; basic anatomy, physiology, pathology, and toxicology; and professional standards and regulations.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 461022 Emergency Medical Technician (EMT)
- 461023 EMS Training

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Note: This pathway requires an agreement with the KY Board of Emergency Medical Services. More information explained via: [www.kbems.kctcs.edu](http://www.kbems.kctcs.edu).

Paramedic

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## MEDICAL ADMINISTRATIVE ASSISTING

CIP 51.0710.00

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the supervision of office managers and other professionals, to perform routine administrative duties in a medical, clinical, or health care facility/system office environment. Includes instruction in general office skills, data processing, office equipment operation, principles of medical record-keeping and business regulations, medical/clinical office procedures, and communications skills.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170920 Medical Office Procedures
- 170922 Internship: Medical Administrative Assistant

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Medical Assistant  
Medical Secretary  
Medical Transcriptionist

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## PHLEBOTOMY TECHNICIAN

CIP 51.1009.01

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the supervision of physicians and other health care professionals, to draw blood samples from patients using a variety of intrusive procedures. Includes instruction in basic vascular anatomy and physiology, blood physiology, skin puncture techniques, venipuncture, venous specimen collection and handling, safety and sanitation procedures, and applicable standards and regulations.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170567 Medical Laboratory Aide (Phlebotomist)

*Choose (1) **ONE CREDIT** from the following:*

- 170501 Allied Health Core Skills
- 170169 Medical Math\*\*
- 170167 Body Structures and Functions OR  
302631 Anatomy (Science Course)

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Medical Lab Tech  
Phlebotomist

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## PHARMACY TECHNICIAN

CIP 51.0805.01

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the supervision of pharmacists, to prepare medications, provide medications and related assistance to patients, and manage pharmacy clinical and business operations. Includes instruction in medical and pharmaceutical terminology, principles of pharmacology and pharmaceuticals, drug identification, pharmacy laboratory procedures, prescription interpretation, patient communication and education, safety procedures, record-keeping, measurement and testing techniques, pharmacy business operations, prescription preparation, logistics and dispensing operations, and applicable standards and regulations.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170558 Pharmacy Technician

*Choose (1) **ONE CREDIT** from the following:*

- 170169 Medical Math\*\*
- 170167 Body Structures and Functions OR  
302631 Anatomy (Science Course)
- 170501 Allied Health Core Skills
- 170614 Pharmacological and Other Therapeutic Modalities

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) OR a full (1) credit course

Pharmacy Technician

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**HEALTH SCIENCES CAREER PATHWAYS  
2016-2017**

**PRE-NURSING  
CIP 51.2699.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals for admission to a professional program in Nursing.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 170111 Principles of Health Science</li> <li>• 170141 Emergency Procedures* AND 170131 Medical Terminology**</li> <li>• 170631 Medicaid Nurse Aide</li> </ul> <p><i>Choose (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 170169 Medical Math**</li> <li>• 170167 Body Structures and Functions <u>OR</u> 302631 Anatomy (Science Course)</li> <li>• 170601 Co-op (Nursing)</li> </ul> <p>Note: (*) Indicates half-credit (.5) course</p> <p>Note: (**) Indicates course can be half-credit (.5) to a full (1) credit course</p>	<p>Licensed Practical Nurse Nurse Nurse Practitioner Nursing Assistant Physician's Assistant Doctor</p>

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**HEALTH SCIENCES CAREER PATHWAYS  
2016-2017**

**SPORTS MEDICINE  
CIP 51.0913.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to work in consultation with, and under the supervision of physicians to prevent and treat sports injuries and associated conditions. Includes instruction in the identification, evaluation, and treatment of athletic injuries and illnesses; first aid and emergency care; therapeutic exercise; anatomy and physiology; exercise physiology; kinesiology and biomechanics; nutrition; sports psychology; personal and community health; knowledge of various sports and their biomechanical and physiological demands; and applicable professional standards and regulations.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 170111 Principles of Health Science
- 170141 Emergency Procedures\* AND 170131 Medical Terminology\*\*
- 170301 Essentials of Sports Medicine
- 170302 Applied Sports Medicine

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) to a full (1) credit course

Athletic Trainer

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# HEALTH SCIENCES CAREER PATHWAYS

2016-2017

## VETERINARY ASSISTANT

**CIP 51.0808.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals, under the supervision of veterinarians, veterinary technicians, laboratory animal specialists, and zoological professionals, to provide patient management, care, and clinical procedures assistance as well as owner communication. Includes instruction in animal nursing care, animal health and nutrition, animal handling, clinical pathology, radiology, surgical assisting, clinical laboratory procedures, office administration skills, patient and owner management, and applicable standards and regulations.

This program follows National Association of Veterinary Technicians in America (NAVTA) guidelines and offers students the opportunity for national certification as an approved Veterinary Assistant.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 170801 Principles of Veterinary Assisting
- 170802 Veterinary Assisting Skills
- 170803 Advanced Veterinary Assisting Skills
- 170804 Veterinary Assisting Internship

Note: (\*) Indicates half-credit (.5) course

Note: (\*\*) Indicates course can be half-credit (.5) to a full (1) credit course

Animal Caretaker  
Animal Trainer  
Marine Biologist  
Veterinarian  
Veterinary Technician  
Zoologist  
Zookeeper

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**COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND  
HEALTH SCIENCES PATHWAY(s)**

Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

<u>Course Code</u>	<u>Course Title</u>
170199	Leadership Dynamics – Health Science
170591	Special Topics in Allied Health
170611	Development of Care Giver Role
170640	Health Science Microbiology/Infection Control
170610	Introduction to Nursing and Health Care System

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# **INFORMATION TECHNOLOGY**

# INFORMATION TECHNOLOGY CAREER PATHWAYS 2016-2017

## COMPUTER PROGRAMMING CIP 11.0201.01

**PATHWAY DESCRIPTION:** The Computer Programming pathway courses will prepare students to design, create, and troubleshoot the latest programming languages used in industry. Students will complete the pathway with the four following courses: Computer Literacy, Computational Thinking, Programming Introduction, and a targeted course for a specific programming language as capstone. Upon completion of this career pathway, students will be prepared for an entry level position in the IT field or continue their education in computer programming.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS:*

- 110110 Computer Literacy OR  
060112 Digital Literacy
- 110251 Computational Thinking

*Choose (2) TWO CREDITS from the following:*

- 110201 Programming (Java, C++, Visual Basic, etc)
- 110202 C++1
- 110205 JAVA
- 110207 Visual Basic
- 110809 JavaScript
- 110206 JAVA II
- 110208 Visual Basic II
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Computer Programmer  
Software Developer  
Database Administrator  
Computer Hardware Engineer  
Computer Systems Analyst  
Computer Network Architect  
Web Developer  
Information Security Analyst  
Computer Systems Manager  
Information Systems Manager  
Project Manager

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2016-2017

## COMPUTER SCIENCE CIP 11.0701.01

**PATHWAY DESCRIPTION:** The Computer Science Pathway courses focus on computer theory, computing problems and solutions, and design of computer systems and user-interfaces. The coursework will include instruction in the principles of computational science, computer development and programming and applications to a variety of end use situations.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (1) ONE CREDIT from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110710 Introduction to Computer Science (May be taken in place of Computer Literacy if proficiency has been demonstrated)</li> </ul> <p><i>Complete (1) ONE CREDIT from the following:</i></p> <ul style="list-style-type: none"> <li>• 110251 Computational Thinking</li> <li>• 110205 JAVA</li> <li>• 110711 AP Computer Science Principles</li> <li>• 110730 Computer Science and Software Engineering (<i>PLTW</i>)</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 110701 AP Computer Science A</li> <li>• 110202 C++1</li> <li>• 110207 Visual Basic</li> <li>• 110809 JavaScript</li> <li>• 110206 JAVA II</li> <li>• 110208 Visual Basic II</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul> <p style="text-align: center;">Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to <a href="#">PLTW Program Requirements</a> for further information.</p>	<p>Software Developer</p> <p>Database Administrator</p> <p>Computer Hardware Engineer</p> <p>Computer Systems Analyst</p> <p>Computer Network Architect</p> <p>Web Developer</p> <p>Information Security Analyst</p> <p>Computer Programmer</p> <p>Computer Systems Manager</p> <p>Information Systems Manager</p> <p>Project Manager</p>

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2016-2017

## INFORMATICS PATHWAY CIP 11.0802.00

**PATHWAY DESCRIPTION:** Students will apply software systems such as Excel, Access and other industry software to acquire, collect, store and communicate data in meaningful ways to clients. Students will manage projects, work in teams, think critically, solve problems and propose solutions to design problems. Further, they will learn to apply literacy, mathematics and science concepts and use technology to effectively solve real-world challenging problems. Through project-based learning, students will explore the future of informatics and learn those habits of behavior and mind unique to professionals in the field. Informatics leverages technology, data and communication by instilling in a new generation the knowledge, imagination and flexibility to tackle complex issues successfully in a data-rich digital world. It is the process of designing systems that take raw data and convert it into new knowledge that can be applied to any field while considering the impact on individuals, organizations and society. **THIS IS A PATHWAY SPECIFIC TO THE SOUTHERN REGION EDUCATION BOARD (SREB). EACH COURSE REQUIRES TEACHER SUMMER TRAINING BEFORE IMPLEMENTATION.**

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** in the following:*

- 111001 Computer, Networks and Databases (**SREB**)
- 111002 Design for the Digital World (**SREB**)
- 111003 Databases in the Cloud (**SREB**)
- 111004 Developing a Cloud Presence (**SREB**)
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Note: (SREB) courses require an agreement between the Southern Region Education Board and the District.

Bioinformaticist  
Data Mapper  
Chemical Informaticist  
Database Designer  
Digital Artist  
Human-Computer Interface Designer  
Information Architect  
Usability Analyst  
Interaction Designer  
System Integrator  
Web Designer  
Software Engineer  
Project Manager  
Informatics Support  
Member Expert

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**WEB DEVELOPMENT AND ADMINISTRATION PATHWAY  
CIP 11.0801.01**

**PATHWAY DESCRIPTION:** The Web pathway courses involve creating, designing and producing interactive multimedia products and services. This will include development of digitally-generated or computer-enhanced media, and the adherence to web standards, as used in business, training, communications and marketing. Organizations of all types and sizes use digital media, web pages, and websites to communicate with existing and potential customers, to track transactions, and to collaborate with colleagues. This pathway will prepare students to enter the workforce ready to participate as leaders in a broad range of careers and further their education. The courses for this pathway are designed to build on each other and should be taken in the order specified.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110801 Web Page Development</li> <li>• 110804 Web Site Design and Production</li> </ul> <p><i>Choose (1) <b>ONE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110213 Computer Graphics</li> <li>• 110917 Internet Technologies</li> <li>• 110251 Computational Thinking</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Internet Project Manager</p> <p>IT Education Teacher</p> <p>Webmaster</p> <p>Web Administrator</p> <p>Web Developer</p> <p>Web Graphic Designer</p> <p>Web Programmer/Analyst</p>

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**DIGITAL DESIGN & GAME DEVELOPMENT  
CIP 36.0113.00**

**PATHWAY DESCRIPTION:** The digital design/gaming pathway courses provide students with a thorough understanding of techniques for designing advanced 3D games and simulations. The courses will cover 2D and 3D graphics, animation, character development, texturing, scripting, program design and coding, and game setup using state-of-the-art software development tools. Completing students will have developed the skills necessary to create 3D graphics and simple applications that can be used for games and simulations.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1-2) ONE -- TWO CREDITS from the following:*

- 113605 Game Design Principles
- 110110 Computer Literacy OR 060112 Digital Literacy

*Choose (2-3) TWO – THREE CREDITS from the following:*

- 113601 Introduction to Digital 3D Game Graphics
- 113602 Game & Engine Development, Animation, (Photoshop)
- 113603 Advanced 3D Game Development
- 110201 Programming Introduction
- 110251 Computational Thinking
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Internet Project Manager  
IT Education Teacher  
Web Animator  
Design Artist  
Cartoonist  
Game Designer  
Game Design Analyst  
Webmaster  
Web Developer  
Web Graphic Designer

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**INFORMATION SUPPORT AND SERVICES PATHWAY  
CIP 47.0104.01**

**PATHWAY DESCRIPTION:** The Information Support and Services pathway focuses on the design of computing systems. The courses include instruction in the principles of computer hardware & software components, algorithms data basis, telecommunications, etc. Any course not found under this career major/sub code may be found in another career major/sub code within this program area.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110102 Help Desk Operations</li> </ul> <p><i>Choose (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110302 Management of Support Services</li> <li>• 110917 Internet Technologies</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Computer Technician</p> <p>Customer Service Representative</p> <p>Data Entry Technician</p> <p>Electronics Technician</p> <p>Quality Assurance Tester</p> <p>Technical Support</p> <p>Help Desk Associate</p> <p>Technical Writing Clerk</p>

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**GEOGRAPHIC INFORMATION SYSTEMS PATHWAY  
CIP 45.0702.00**

**PATHWAY DESCRIPTION:** The GIS pathway is built on a foundation of computer-aided mapping and surveying technology for collecting spatial data, database generation and manipulation for tabular data, and GIS specific courses for organization, analysis and reporting. Students will create maps that identify quantities and/or densities, analyze what's inside or near a study area and indicate change.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110107 Introduction to GIS – ArcView</li> <li>• 110315 GIS Software Tools and Applications</li> <li>• 110316 Special Topics in GIS</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>GIS Technician Project Manager</p> <p>Computer Programmer</p> <p>Database Administrator</p> <p>System Administrator, Cartographic Designer</p> <p>Business Development</p> <p>Related Managerial &amp; Administrative Roles</p> <p>Surveyor</p>

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# INFORMATION TECHNOLOGY CAREER PATHWAYS

## 2016-2017

### NETWORK ADMINISTRATION PATHWAY

#### CIP 11.0901.01

**PATHWAY DESCRIPTION:** The networking pathway courses will help students learn new administration support skills or upgrade existing computer information systems skills. Students will be able to properly install networking software on an appropriately sized computer, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshooting common problems, adding new users and attending to security concerns, work within the ethical and professional parameters in the field of network administration.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u> 060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110901 Introduction to Networking Concepts</li> <li>• 110251 Computational Thinking</li> <li>• 110917 Internet Technologies</li> <li>• 110918 Information Technology Co-op <u>OR</u> 110919 Information Technology Internship</li> </ul>	<p>Network Server Administrator</p> <p>Support Team Member</p> <p>Quality Assurance System Analyst</p> <p>Sales Representative</p> <p>Technical Support Rep.</p> <p>Technical Writing Expert</p> <p>Electronics Engineer</p> <p>Hardware Engineer</p> <p>System Administrator</p> <p>Network Administrator</p>

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# INFORMATION TECHNOLOGY CAREER PATHWAYS

## 2016-2017

### NETWORK ADMINISTRATION “MCSA” PATHWAY

#### CIP 11.1001.00

**PATHWAY DESCRIPTION:** The MCSA pathway courses will help students learn new Microsoft server administration support skills or upgrade existing computer information systems skills. Students will be able to properly install Microsoft server software on an appropriately sized computer, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshooting common problems, adding new users and attending to security concerns, work within the ethical and professional parameters in the field of Microsoft Server Administration. Students working in this pathway will work toward the MCSA certification.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 110110 Computer Literacy <u>OR</u></li> <li>060112 Digital Literacy</li> <li>• 110101 Computer Hardware and Software Maintenance</li> <li>• 110901 Introduction to Networking Concepts</li> <li>• 110913 MS Client/Server Configuration</li> <li>• 110918 Information Technology Co-op <u>OR</u></li> <li>110919 Information Technology Internship</li> </ul>	<p>Microsoft Server Administrator</p> <p>Microsoft server admin. Support team member</p> <p>Electronics Engineer</p> <p>Hardware Engineer</p> <p>System Administrator</p> <p>Quality Assurance System Analyst</p> <p>Sales Representative</p> <p>Technical Support Rep.</p> <p>Technical Writing Expert</p> <p>Security Expert</p>

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# INFORMATION TECHNOLOGY CAREER PATHWAYS 2016-2017

## NETWORK ADMINISTRATION CISCO PATHWAY CIP 11.1002.00

**PATHWAY DESCRIPTION:** The CISCO pathway courses will help students learn new CISCO network administration support skills or upgrade existing computer information systems skills. Students will be able to properly install CISCO software on an appropriately sized computer, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshooting common problems, adding new users and attending to security concerns, work within the ethical and professional parameters in the field of CISCO Network administration.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 110110 Computer Literacy OR  
060112 Digital Literacy
- 110101 Computer Hardware and Software Maintenance
- 110902 Network Fundamentals CISCO I
- 110903 Routing Protocols and Concepts CISCO II
- 110904 LAN Switching and Wireless Scaling  
Networks CISCO III
- 110905 Accessing the WAN & Connecting  
Networks CISCO IV
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Cisco Network Administrator  
  
Cisco Engineer  
  
Cisco Hardware Engineer  
  
Cisco System Administrator  
  
Quality Assurance System Analyst  
  
Sales Representative  
  
Technical Support Rep.  
  
Technical Writing Expert  
  
Security Expert

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**INFORMATION TECHNOLOGY CAREER PATHWAYS  
2016-2017**

**SECURITY PATHWAY  
CIP 11.1003.00**

**PATHWAY DESCRIPTION:** The Network Administration pathway specializing in Security courses will help students be able to properly design and install a wired LAN, including all network devices, physically connect servers and desktop computers, properly design and install a wireless LAN including all network devices, and make physical LAN connections for servers and desktop computers, integrate the Wireless LAN with the wired LAN and work within the ethical and professional parameters in the Computer Networking profession. Students will be a team member, learn new network administration support skills and upgrade existing computer information system skills. Students in this pathway will work towards the Security + certification.

**BEST PRACTICE COURSES**

**EXAMPLE ILP-RELATED CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (4) **FOUR CREDIT** from the following:*

- 110110 Computer Literacy OR  
060112 Digital Literacy
- 110101 Computer Hardware and Software Maintenance
- 110901 Introduction to Networking Concepts
- 110912 Security Fundamentals
- 110918 Information Technology Co-op OR  
110919 Information Technology Internship

Networking Security Administrator

Electronics Security Engineer

Hardware Security Engineer

System Security Administrator

Quality Assurance System Security Analyst

Security Expert

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND INFORMATION TECHNOLOGY PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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110152 Special Topics, Information Support and Services
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110204 Productivity Software (CIT 130)
--

110211 Introduction to Database Design (Fundamentals) (CIT 170)
---

110252 Special Topics, Programming
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110399 Leadership Dynamics
----------------------------

110604 Digital 3D Graphics & Special Effects II
---

110752 Special Topics Computer Science
--

110810 Flash with ActionScript
--------------------------------

110852 Special Topics, Web Development/Administration
---

110906 Network Hardware Installation and Troubleshooting (CIT 260)
--

110907 MS Active Directory Server/Server Infrastructure (CIT 214)
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110952 Special Topics, Networking
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JAG Courses
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Career Options
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## **LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY**

**LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY  
CAREER PATHWAYS  
2016-2017**

**CORRECTIONS  
CIP 43.0102.00**

**PATHWAY DESCRIPTION:** The program prepares students to study the theories and principles of correctional science and to function as professional corrections officers and other workers in public and/or private incarceration facilities.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 461044 Introduction to Criminal Justice
- 461037 Correctional Systems

*Choose (2) TWO CREDITS from the following:*

- 461018 Health and Well-Being for Law Enforcement
- 461043 Criminal Investigation
- 461011 Basic Telecommunications
- 461042 Basic Security Services

Correctional Officer  
Detective  
Police Officer  
Private Investigator  
Probation/Parole Officer  
Security Guard

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**LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY  
CAREER PATHWAYS  
2016-2017**

**HOMELAND SECURITY  
CIP 43.0301.00**

**PATHWAY DESCRIPTION:** Homeland Security focuses on security policy, planning, and operations dedicated to the protection of U.S. territory, assets, infrastructure, institutions and citizens from external threats. Includes instruction in national security policy, government relations, intelligence, law enforcement, security technology, communications and information technology, homeland security planning and operations, disaster planning and applications to specific threat scenarios.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 461038 Introduction to Homeland Security (<i>new course 2016-2017</i>)</li> <li>• 461013 Emergency Management</li> </ul> <p><i>Choose (2) TWO CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 461039 Terrorism and Counterterrorism Operations (<i>new course 2016-2017</i>)</li> <li>• 461040 Critical Infrastructure Protection (<i>new course 2016-2017</i>)</li> <li>• 461011 Basic Telecommunications</li> <li>• 461045 Law Enforcement</li> <li>• 461043 Criminal Investigation</li> <li>• 461033 Introduction to Fire Service (<i>Previously titled Introduction to Fire Safety</i>)</li> <li>• 461032 Firefighters Basic Skills I</li> </ul>	<p>Correctional Officer</p> <p>Crime Scene Investigator</p> <p>Criminologist</p> <p>Detective</p> <p>Police Officer</p> <p>Private Investigator</p> <p>Probation/Parole Officer</p> <p>Security Guard</p> <p>Federal Agent</p>

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**LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY  
CAREER PATHWAYS  
2016-2017**

**LAW ENFORCEMENT SERVICES  
CIP 43.0107.00**

**PATHWAY DESCRIPTION:** Law Enforcement Services prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control and public relations, witness interviewing, evidence collection and management, basic crime prevention methods, weapon and equipment operation and maintenance, report preparation, communicating with the public, and other routine law enforcement responsibilities.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS** from the following:*

- 461044 Introduction to Criminal Justice (*new course 2016-2017*)
- 461045 Law Enforcement
- 461018 Health and Well-Being for Law Enforcement  
(*previously titled Introduction to Law, Public Safety & Security/Physical Training*)

*Choose (1) **ONE CREDIT** from the following:*

- 461043 Criminal Investigation
- 461037 Correctional Systems
- 461011 Basic Telecommunications
- 461042 Basic Security Services
- 461038 Introduction to Homeland Security (*new course 2016-2017*)
- 461039 Terrorism and Counterterrorism Operations (*new course 2016-2017*)
- 461013 Emergency Management

Correctional Officer  
Crime Scene Investigator  
Criminologist  
Detective  
Police Officer  
Private Investigator  
Probation/Parole Officer  
Security Guard

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**LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY  
CAREER PATHWAYS  
2016-2017**

**PRE-LAW STUDIES  
CIP 22.0001.00**

**PATHWAY DESCRIPTION:** Students will obtain skills in preparation for legal careers in law firms, courtrooms, government, and businesses. Instruction will cover legal vocabulary and ethics, the philosophy and history of criminal justice, effective and persuasive communications (oral and written), and the state and federal court system.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following:*

- 461051 Introduction to Law (*new course 2016-2017*)
- 461020 Criminal Law and Procedures (*new course 2016-2017*)

*Complete (2) TWO CREDITS from the following:*

- 461019 Civil Law and Procedures (*previously titled Legal Issues*)
- 461052 Trial Advocacy (*new course 2016-2017*)
- 461049 Appellate Advocacy (*new course 2016-2017*)
- 461047 Advanced Legal Practice (*new course 2016-2017*)
- 461050 Constitutional Law and Civil Rights (*new course 2016-2017*)
- 461048 Alternative Dispute Resolution (*new course 2016-2017*)
- 461044 Introduction to Criminal Justice
- 461043 Criminal Investigation
- 070122 Financial Accounting OR 070124 Fundamentals of Accounting I
- 060121 Business Law
- 461098 Special Topics—Pre-Law OR  
461095 Internship (Pre-Law) OR  
461097 Co-op (Pre-Law) (*new courses 2016-2017*)

Corporate/Commercial  
Lawyer  
Criminal Lawyer  
Federal Agent  
Judge  
Lawyer  
Paralegal

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**COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND  
LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY PATHWAY(S)**

Upon completion of a pathway, additional coursework to enhance student learning is encouraged. Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

<u>Course Code</u>	<u>Course Title</u>
	Any ROTC course
	Any foreign language or sign language course
	Any Social Studies—Political Science and Government (451000) course
302616	Forensics
458014	AP US History
450812	US History
160908-160912	Latin 1-5
070881	Legal Office
070897	Legal Office Services
231000	English/Language Arts—Speech, Debate, Forensics
231011	Public Speaking
231021-231023	Speech 1-3
231099	Speech, Debate, and Forensics, Other
231024	College Introduction Oral Communication
170131	Medical Terminology 1
170132	Medical Terminology II
461099	Special Topics – Public Services/Protective Services
461094	Internship (Public Services/Protective Services)
461096	Co-op (Public Services/Protective Services)

# **MANUFACTURING TECHNOLOGY**

**COMPUTER AIDED DESIGN (CAD)  
CAREER PATHWAYS  
2016-2017**

**CIVIL DESIGNER  
CIP 15.1301.01**

**PATHWAY DESCRIPTION:** Civil Designers apply technical knowledge and skills to develop working drawing and electronic simulations in support of civil engineers, geological engineers, and related professionals. Includes instruction in basic civil engineering principles, geological and seismographic mapping, machine drafting, computer-aided drafting (CAD), pipe drafting, survey interpretation, and blueprint reading.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480110 Introduction to Computer Aided Drafting
- 480112 Intermediate Computer Aided Drafting
- 480104-Introduction to Surveying OR  
480113 Engineering Graphics

*Choose (1) **ONE CREDIT** from the following:*

- 480127 Industrial Drafting Process
- 480136 Parametric Modeling
- 480145 Internship I
- 480135 Mechanical Design
- 480142 Cooperative Education I (CAD)
- 480179 Special Problems (CAD)
- 219901 Introduction to Engineering Design (*PLTW*)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Engineer Technician  
Architectural Engineer  
Electrical Engineer  
Industrial Engineer  
Mechanical Engineer  
Civil Engineer

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**COMPUTER AIDED DESIGN (CAD)  
CAREER PATHWAYS  
2016-2017**

**MECHANICAL DESIGNER  
CIP 15.1301.02**

**PATHWAY DESCRIPTION:** Mechanical designers have a working knowledge of mechanical parts as well as computer-aided design (CAD) software, such as AutoCAD. Mechanical designers begin a project by meeting with project managers, engineers, and clients to understand the needs and requirements for a new product or mechanical system. For example, designers working on a project to create an automobile engine may consult engineers regarding which structural materials to use or clients regarding engine efficiency requirements. Once materials and specifications have been determined, designers begin using CAD software to plan and develop models.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480110 Introduction to Computer Aided Drafting
- 480136 Parametric Modeling
- 480113 Engineering Graphics

*Choose (1) **ONE CREDIT** from the following:*

- 480135 Mechanical Design
- 480127 Industrial Drafting Process
- 470924 Advanced Dimensioning and Measurement
- 480112 Intermediate Computer Aided Drafting
- 480145 Internship I (CAD) OR  
480142 Cooperative Education I (CAD)
- 480179 Special Problems (CAD)
- 219901 Introduction to Engineering Design (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Engineer Technician  
Electrical Engineer  
Industrial Engineer  
Mechanical Engineer  
Civil Engineer

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**COMPUTER AIDED DESIGN (CAD)  
CAREER PATHWAYS  
2016-2017**

**ARCHITECTURAL DESIGNER  
CIP 15.1301.03**

**PATHWAY DESCRIPTION:** Architectural Designers apply mathematical and scientific principles to building design, concentrating on structural demands and functionality while taking into account economic and safety factors. Architectural Designers need to be able to diagram designs manually as well through computer-aided drafting (CAD). Design systems are created for a building pertaining to, for instance, heating and air conditioning, lighting and plumbing. Also included are concerns and detail to landscape architecture and crossovers such as environmental design.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480110 Introduction to Computer Aided Drafting
- 480117 Introduction to Architecture
- 480116 Architectural Design

*Choose (1) **ONE CREDITS** from the following:*

- 480127 Industrial Drafting Process
- 480113 Engineering Graphics
- 470924 Advanced Dimensioning and Measurement
- 480179 Special Problems (CAD)
- 480112 Intermediate Computer Aided Drafting
- 219901 Introduction to Engineering Design (**PLTW**)
- 480145 Internship I (CAD) OR  
480142 Cooperative Education I (CAD)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Engineer Technician  
Architectural Engineer  
Electrical Engineer  
Civil Engineer

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**COMPUTER AIDED DESIGN (CAD)  
CAREER PATHWAYS  
2016-2017**

**CAD MANUFACTURING TRACK  
CIP 48.0500.99**

**PATHWAY DESCRIPTION:** The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a partnership between the Kentucky Department of Education’s Office of Career and Technical Education and the Kentucky Labor Cabinet to provide secondary students with career pathway opportunities into employers who offer Registered Apprenticeship programs.

Employers are able to tailor the program for their specific needs and select the Career and Technical Education courses and students for their apprenticeship pathway. Employers benefit by gaining future employees that have a good foundation and an interest in that occupation. Additionally, it enables students to receive a nationally recognized credential.

Successful completion is determined by the employer and the student will be awarded an industry certification through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the registered apprenticeship.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR CREDITS:</i></p> <ul style="list-style-type: none"> <li>• A minimum of four (4) courses chosen from the partnering technical center’s manufacturing course offerings. These courses are chosen by the employer sponsoring the Registered Apprenticeship. The employer must provide a student co-op opportunity.</li> </ul>	<p>Engineer Technician Architectural Engineer Electrical Engineer Industrial Engineer Mechanical Engineer Civil Engineer</p>

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved in the TRACK program except for student employee wages. For more information, please refer to:

<http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

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**COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND  
CAD PATHWAY(s)**

Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

- Career Options
- JAG Courses
- 480199 Special Topics - CAD

**COMPUTERIZED MANUFACTURING & MACHINING  
CAREER PATHWAYS  
2016-2017**

**MACHINIST TECHNICIAN  
CIP 48.0503.01**

**PATHWAY DESCRIPTION:** Machinist Technicians set up and operate a variety of machine tools, such as lathes, milling machines, and grinders, to produce precision metal parts, instruments, and tools. These tools are either manually controlled or computer-numerically controlled (CNC). Machinist Technicians must be able to read blueprints, align and adjust cutting tools and inspect the finished product to meet customer specifications.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470921 Blueprint Reading for Machinists
- 470913 Fundamentals of Machine Tools-A
- 470914 Fundamentals of Machine Tools-B

*Choose (1) **ONE CREDIT** from the following:*

- 470911 Applied Machining - I
- 470912 Applied Machining - II
- 470915 Manual Programming
- 480110 Introduction to Computer Aided Drafting
- 470922 Mechanical Blueprint Reading\*
- 470928 Metrology/Control Charts\*
- 219901 Introduction to Engineering Design (**PLTW**)
- 470929 Co-op (Machine Tool) OR 470932 Internship (Machine Tool)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Machine Operator  
Machinist  
Maintenance Machinist  
CNC Machine Operator  
CNC Programmer  
Quality Control  
Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

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**COMPUTERIZED MANUFACTURING & MACHINING  
CAREER PATHWAYS  
2016-2017**

**MACHINIST OPERATOR  
CIP 48.0503.02**

**PATHWAY DESCRIPTION:** Machine operators are responsible for producing precision machined parts. They measure parts with precision tools in order to make sure certain parts meet pre-determined quality and cosmetic standards. When parts have passed inspection, the parts go on to the next phase of production. Machine operators are expected to meet production quotas. The level of documentation required varies, depending on the degree of precision needed for the finished product. Machine operators also need to keep track of the number of units that are scrapped due to various errors.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470913 Fundamentals of Machine Tools-A
- 470914 Fundamentals of Machine Tools-B
- 470911 Applied Machining - I

*Choose (1) **ONE CREDIT** from the following:*

- 470921 Blueprint Reading for Machinists
- 470912 Applied Machining - II
- 470915 Manual Programming
- 480110 Introduction to Computer Aided Drafting
- 470922 Mechanical Blueprint Reading\*
- 470928 Metrology/Control Charts\*
- 219901 Introduction to Engineering Design (**PLTW**)
- 470929 Co-op (Machine Tool) OR 470932 Internship (Machine Tool)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Machinist Technician  
Machinist  
Maintenance Machinist  
CNC Machine Operator  
CNC Programmer  
Quality Control Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

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**COMPUTERIZED MANUFACTURING & MACHINING  
CAREER PATHWAYS  
2016-2017**

**COMPUTER NUMERICAL CONTROL (CNC) PROGRAMMER  
CIP 48.0503.03**

**PATHWAY DESCRIPTION:** CNC programmers develop and run programs which direct the CNC machines to cut and shape metal or plastic for such things as airplanes, automobiles and other industrial machines. CNC programmers use blueprints and 3-dimensional computer designs to create the programs which result in precisely cut products. Attention to detail and the ability to follow precise directions are vital to a CNC programmer as well as the ability to work independently.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR OR MORE CREDITS:***

- 470921 Blueprint Reading for Machinists
- 480110 Introduction to Computer Aided Drafting
- 470913 Fundamentals of Machine Tools-A
- 470915 Manual Programming
- 470925 CAD/CAM/CNC
- 470929 Co-op (Machine Tool) OR 470932 Internship (Machine Tool)

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Machine Operator  
Machinist Technician  
Machinist  
Maintenance Machinist  
CNC Machine Operator  
CNC Programmer  
Quality Control  
Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

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**COMPUTERIZED MANUFACTURING & MACHINING  
CAREER PATHWAYS  
2016-2017**

**COMPUTER NUMERICAL CONTROL (CNC) OPERATOR  
CIP 48.-0503.04**

**PATHWAY DESCRIPTION:** CNC operators monitor and operate CNC (computer numerically controlled) machines to cut metal and plastic parts for the manufacturing industry. They select and download CNC programs and perform test operations to ensure the product is made to specifications. The CNC operator may be responsible for selecting and setting all tools required for producing the final precision part to customer specifications.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- 470913 CMM 110 Fundamentals of Machine Tools-A
- 470914 CMM 112 Fundamentals of Machine Tools-B
- 470915 CMM 130 Manual Programming
- 470925 CMM 132 CAD/CAM/CNC
- 470929 Co-op (Machine Tool) OR 470932 Internship (Machine Tool)

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Machine Operator  
Machinist Technician  
Machinist  
Maintenance Machinist  
CNC Programmer  
Quality Control Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

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**COMPUTERIZED MANUFACTURING & MACHINING  
CAREER PATHWAYS  
2016-2017**

**COMPUTERIZED MANUFACTURING & MACHINING  
MANUFACTURING TRACK  
CIP 48.0500.99**

**PATHWAY DESCRIPTION:** The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a partnership between the Kentucky Department of Education’s Office of Career and Technical Education and the Kentucky Labor Cabinet to provide secondary students with career pathway opportunities into employers who offer Registered Apprenticeship programs.

Employers are able to tailor the program for their specific needs and select the Career and Technical Education courses and students for their apprenticeship pathway. Employers benefit by gaining future employees that have a good foundation and an interest in that occupation. Additionally, it enables students to receive a nationally recognized credential.

Successful completion is determined by the employer and the student will be awarded an industry certification through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the registered apprenticeship.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- A minimum of four (4) courses chosen from the partnering technical center’s manufacturing course offerings. These courses are chosen by the employer sponsoring the Registered Apprenticeship. The employer must provide a student co-op opportunity.

Machine Operator  
Machinist Technician  
Machinist  
Maintenance Machinist  
CNC Machine Operator  
CNC Programmer  
Quality Control  
Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved in the TRACK program except for student employee wages. For more information, please refer to: <http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND CMM PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 470924 Advanced Dimensioning and Measurement</li></ul>                         |
| <ul style="list-style-type: none"><li>• 480114 Interdisciplinary Geometry and Computer Aided Drafting (CAD)</li></ul>  |
| <ul style="list-style-type: none"><li>• 480112 Intermediate Computer Aided Drafting</li></ul>                          |
| <ul style="list-style-type: none"><li>• 480927 Conversational Editing &amp; Subroutines</li></ul>                      |
| <ul style="list-style-type: none"><li>• 470926 Introduction to Conversational Programming</li></ul>                    |
| <ul style="list-style-type: none"><li>• 470979 Special Problems (CMM)</li></ul>  |
| <ul style="list-style-type: none"><li>• 270643 Technical Mathematics (<i>must be taught for dual credit</i>)</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>   |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>  |

**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**MAINTENANCE MECHANIC  
CIP 47.0303.01**

**PATHWAY DESCRIPTION:** Maintenance Mechanics perform machine setup, troubleshooting, repairs and preventive maintenance service; including but not limited to, mechanical, electrical, pneumatic and hydraulic systems for industrial production and processing machinery and equipment. Reads and interprets equipment manuals and work orders to perform required maintenance and service. Analyses and inspects equipment, structures, or materials to identify the cause of errors or other problems or defects.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

Maintenance Mechanic  
Maintenance Inspector  
Maintenance Supervisor  
Industrial Engineer Tech  
Mechanical Engineer

*Complete (3) **THREE CREDITS:***

- 470321 Fluid Power
- 470322 Industrial Maintenance Electrical Principles
- 470318 Maintaining Industrial Equipment

*Choose (1) **ONE CREDIT** from the following:*

- 470348 Industrial Maintenance Electrical Motor Controls
- 499925 Basic Troubleshooting\*
- 470301 Shop Management\*
- 499920 Basic Blueprint Reading\*
- 470351 Robotics and Industrial Automation (Ind Maint)
- 470328 Welding for Maintenance
- 470313 Machine Tool A (IMT)
- 219901 Introduction to Engineering Design (**PLTW**)
- 470308 Internship (Ind Maint) OR  
470305 Cooperative Education I (Ind Maint)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**ELECTRICAL TECHNICIAN  
CIP 47.0303.02**

**PATHWAY DESCRIPTION:** Electrical technicians apply electrical theory and related knowledge to diagnose and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories: Assembles and tests experimental motor-control devices, switch panels, transformers, generator windings, solenoids, and other electrical equipment and components according to engineering data and knowledge of electrical principles.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

Electrical Technician  
Electrical Supervisor  
Electrical Engineer

*Complete (3) **THREE CREDITS:***

- 470322 Industrial Maintenance Electrical Principles
- 470348 Industrial Maintenance Electrical Motor Controls
- 470330 Industrial Maintenance of PLC

*Choose (1) **ONE CREDIT** from the following:*

- 499925 Basic Troubleshooting\*
- 470301 Shop Management\*
- 499920 Basic Blueprint Reading\*
- 470328 Welding for Maintenance
- 470318 Maintaining Industrial Equipment
- 470351 Robotics and Industrial Automation
- 219901 Introduction to Engineering Design (*PLTW*)
- 470308 Internship (Ind Maint) OR  
470305 Cooperative Education I (Ind Maint)

Note: (*PLTW*) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**MAINTENANCE MACHINIST  
CIP 47.0303.03**

**PATHWAY DESCRIPTION:** Maintenance Machinists set up and operate a variety of machine tools, and fits and assembles parts to fabricate or repair machine tools and maintain industrial machines, applying knowledge of mechanics, shop mathematics, metal properties, layout, and machining procedures. Observes, listens and diagnoses operating machinery or equipment to correct machine malfunction and determine need for adjustment or repair.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470921 Blueprint Reading for Machinist
- 470313 Machine Tool A (IMT)
- 470314 Machine Tool B (IMT)

*Choose (1) **ONE CREDIT** from the following:*

- 470360 Applied Machining I
- 470301 Shop Management\*
- 499925 Basic Troubleshooting\*
- 470302 Basic Blueprint Reading\*
- 470318 Maintaining Industrial Equipment
- 470328 Welding for Maintenance
- 470322 Industrial Maintenance Electrical Principles
- 219901 Introduction to Engineering Design (**PLTW**)
- 470308 Internship (Ind Maint) OR
- 470305 Cooperative Education I (Ind Maint)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Maintenance Machinist  
Maintenance Mechanic  
Mechanical Engineer  
Industrial Engineer

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**FLUID POWER MECHANIC  
CIP 47.0303.04**

**PATHWAY DESCRIPTION:** Fluid Power Mechanics fabricate, assembly, service, maintain, repair, and tests industrial hydraulic equipment. Applies knowledge of hydraulic, pneumatic, and electrical principles to test equipment, and analyzes and records data, such as fluid pressure, flow measure, and power loss due to friction and parts wear. The fluid power mechanic understands hydraulic symbols, reads system schematics, understands electrical principles, and is skilled in test procedures and instrumentation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470321 Fluid Power
- 470316 Advanced Hydraulic Systems
- 470326 Pneumatic Systems

*Choose (1) **ONE CREDIT** from the following:*

- 499925 Basic Troubleshooting\*
- 499920 Basic Blueprint Reading\*
- 470301 Shop Management\*
- 470351 Robotics and Industrial Automation
- 470322 Industrial Maintenance Electrical Principles
- 470318 Maintaining Industrial Equipment
- 470328 Welding for Maintenance
- 219901 Introduction to Engineering Design (*PLTW*)
- 470308 Internship (Ind Maint) OR  
470305 Cooperative Education I (Ind Maint)

Note: (*PLTW*) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Industrial Hydraulic Technician  
Mechanical Engineer  
Industrial Engineer  
Pneumatic Specialist  
Fluid Power Supervisor  
Hydraulic Engineer

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**REFRIGERATION TECHNICIAN  
CIP 47.0303.05**

**PATHWAY DESCRIPTION:** Refrigeration technician's service, and repair refrigeration systems and equipment such as condensing units, compressors, and evaporators. Some duties of the job include connecting refrigeration lines and electrical power sources, handling hazardous refrigerant substances, and checking systems and equipment for leaks. Technicians will often use system blueprints or manufacturers' instructions to complete a job. When working on air conditioning and refrigeration systems, technicians must follow government regulations regarding the conservation, recovery, and recycling of refrigerants. This includes the proper handling and disposal of fluids and pressurized gases.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470349 Refrigeration Fundamentals (IMT)
- 470365 HVAC Electricity (IMT)
- 470358 Electrical Components

*Choose (1) **ONE CREDIT** from the Following:*

- 499925 Basic Troubleshooting\*
- 470363 Heating & Humidification (IMT)
- 470361 Cooling & Dehumidification (IMT)
- 470318 Maintaining Industrial Equipment
- 499920 Basic Blueprint Reading\*
- 470301 Shop Management\*
- 219901 Introduction to Engineering Design (*PLTW*)
- 470308 Internship (Ind Maint) OR  
470305 Cooperative Education I (Ind Maint)

Note: (*PLTW*) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Refrigeration Specialist  
Mechanical Engineer  
Industrial Engineer  
Refrigerant Supervisor  
Refrigeration Engineer

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**WELDING MAINTENANCE TECHNICIAN  
CIP 47.0303.06**

PATHWAY DESCRIPTION: Maintenance Welding Technicians layout, fabricate, set up and weld metals in all positions. Welding technicians must operate all types of welding equipment and apply safety first and comply with all OSHA guidelines and regulations. They read blueprints, apply mechanical skills, calculate shop mathematics and know the metal properties, to perform welding procedures to meet industry specifications. Additional skills that enhance employability opportunities are diagnosing operating machinery or equipment to correct machine malfunction and determine need for adjustment or repair.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 470328 Welding for Maintenance
- 470354 Shielded Metal Arc Welding
- 470367 Gas Metal Arc Welding (IMT)

*Choose (1) **ONE CREDIT** from the Following:*

- 499925 Basic Troubleshooting\*
- 470322 Industrial Maintenance Electrical Principles
- 470318 Maintaining Industrial Equipment
- 470313 Machine Tool A (IMT)
- 499920 Basic Blueprint Reading\*
- 470301 Shop Management\*
- 219901 Introduction to Engineering Design (*PLTW*)
- 470308 Internship (Ind Maint) OR  
470305 Cooperative Education I (Ind Maint)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Mechanical Engineer  
Industrial Engineer  
Maintenance Supervisor  
Welding Maintenance Engineer  
Master Maintenance

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**INDUSTRIAL MAINTENANCE TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**IMT TRACK  
CIP 48.0500.99**

**PATHWAY DESCRIPTION:** The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a partnership between the Kentucky Department of Education’s Office of Career and Technical Education and the Kentucky Labor Cabinet to provide secondary students with career pathway opportunities into employers who offer Registered Apprenticeship programs.

Employers are able to tailor the program for their specific needs and select the Career and Technical Education courses and students for their apprenticeship pathway. Employers benefit by gaining future employees that have a good foundation and an interest in that occupation. Additionally, it enables students to receive a nationally recognized credential.

Successful completion is determined by the employer and the student will be awarded an industry certification through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the registered apprenticeship.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- A minimum of four (4) courses chosen from the partnering technical center’s manufacturing course offerings. These courses are chosen by the employer sponsoring the Registered Apprenticeship. The employer must provide a student co-op opportunity.

Engineer Technician  
Maintenance Mechanic  
Fluid Power Mechanic  
Maintenance Machinist  
Refrigeration Technician  
Electrical Engineer  
Industrial Engineer  
Mechanical Engineer

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved in the TRACK program except for student employee wages. For more information, please refer to: <http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND IMT PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

- |   |
|---|
| <ul style="list-style-type: none"><li>• Career Options</li></ul>  |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>   |
| <ul style="list-style-type: none"><li>• 470336 Special Topics – Industrial Maintenance Technology</li></ul> |

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# METAL FABRICATION CAREER PATHWAYS

2016-2017

## SHEET METAL TECHNICIAN

CIP 48.0506.01

**PATHWAY DESCRIPTION:** The Sheet Metal Technician creates parts to the specifications required through line development and fabrication. Sheet metal is measured and sheet metal patterns are cut and formed for the determined available space. Sheet metal technicians must have strong math skills for the development of geometrical parts. The sheet metal technician provides direct support to manufacturing for the design, fabrication, modification, and evaluation of parts, assemblies, components and sub-assemblies according to specifications.

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- 480816 Metal Trade Information & Metals
- 480813 Parallel Line Layout
- 480817 Sheet Metal 1-A
- 480818 Sheet Metal 1-B
- 480803 Co-op I (Metal Fab) OR  
480806 Internship (Metal Fab)

### EXAMPLE ILP-RELATED CAREER TITLES

Sheet Metal Production  
Technician

Sheet Metal Mechanic  
Fabrication Technician

Layout Technician

Precision Sheet Metal  
Technician

Manufacturing Engineer

Sheet Metal Engineer

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# METAL FABRICATION CAREER PATHWAYS

2016-2017

## METAL FABRICATION TRACK

**CIP 48.0500.99**

**PATHWAY DESCRIPTION:** The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a partnership between the Kentucky Department of Education’s Office of Career and Technical Education and the Kentucky Labor Cabinet to provide secondary students with career pathway opportunities into employers who offer Registered Apprenticeship programs.

Employers are able to tailor the program for their specific needs and select the Career and Technical Education courses and students for their apprenticeship pathway. Employers benefit by gaining future employees that have a good foundation and an interest in that occupation. Additionally, it enables students to receive a nationally recognized credential.

Successful completion is determined by the employer and the student will be awarded an industry certification through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the registered apprenticeship.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS:***

- A minimum of four (4) courses chosen from the partnering technical center’s manufacturing course offerings. These courses are chosen by the employer sponsoring the Registered Apprenticeship. The employer must provide a student co-op opportunity.

Sheet Metal Production Technician  
Sheet Metal Mechanic  
Fabrication Technician  
Layout Technician  
Precision Sheet Metal Technician  
Manufacturing Engineer  
Sheet Metal Worker  
Sheet Metal Engineer

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved in the TRACK program except for student employee wages. For more information, please refer to: <http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND THE METAL FAB PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 480812 Heat Load/Duct Design</li></ul>             |
| <ul style="list-style-type: none"><li>• 480819 Sheer Metal II-A</li></ul>                  |
| <ul style="list-style-type: none"><li>• 480820 Sheet Metal II-B</li></ul>                  |
| <ul style="list-style-type: none"><li>• 480814 Radial Line Development</li></ul>           |
| <ul style="list-style-type: none"><li>• 480899 Special Topics- Metal Fabrication</li></ul> |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>                           |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                              |

# WELDING TECHNOLOGY CAREER PATHWAYS 2016-2017

## WELDER-ENTRY LEVEL CIP 48.0508.01

**PATHWAY DESCRIPTION:** An Entry Level Welder demonstrates the ability to assist lead welders in the fabrication of steel and metal structures. Must be adept at performing basic welding functions and calculating dimensions as well as operating power equipment, grinders and other related tools. Must be proficient in reading and interpreting basic blueprints and following work procedure specifications (WPS).

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480505 Blueprint Reading for Welding OR  
499920 Basic Blueprint Reading\* AND 480503 Basic Welding A\*
- 480523 Oxy-fuel Systems OR  
480501 Cutting Processes
- 480521 Shielded Metal Arc Welding (SMAW)

*Choose (1) **ONE CREDIT** from the following:*

- 480522 Gas Metal Arc Welding
- 480533 GMAW Groove Lab
- 480528 SMAW Groove Welds with Backing Lab
- 480535 SMAW Open Groove Lab
- 480525 Gas Tungsten Arc Welding
- 219901 Introduction to Engineering Design (*PLTW*)
- 480541 Cooperative Education (Welding) OR  
480544 Internship (Welding)

Note: (*PLTW*) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

### EXAMPLE ILP-RELATED CAREER TITLES

Combination Welder  
Pipe Welder  
Ironworker  
Tungsten Inert Gas  
(TIG) Welder  
Certified Welding  
Inspector (CWI)  
Certified Welding  
Educator (CWE)  
Welding Engineer  
Structural Engineer  
Mechanical Engineer

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**WELDING TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**COMBINATION ARC WELDER  
CIP 48.0508.03**

**PATHWAY DESCRIPTION:** Combination Arc Welders set up and align materials to be joined by either the Shielded Metal Arc (SMAW) or Gas Metal Arc welding process. Welds together metal components of products in an assembly setting, such as automobiles, appliances, and aircraft, as specified by layout, blueprints, diagram, work order, procedures, or oral instructions, using the Gas Metal Arc welding process. Welds together structural steel components in a construction setting using the Shielded Metal Arc (SMAW) process. Must be knowledgeable of the required geometry and physical properties of the materials to be welded and capable of passing required weld certifications.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR CREDITS:</i></p> <ul style="list-style-type: none"> <li>• 480505 Blueprint Reading for Welding <u>OR</u> 499920 Basic Blueprint Reading* <u>AND</u> 480503 Basic Welding A*</li> <li>• 480523 Oxy-fuel Systems <u>OR</u> 480501 Cutting Processes</li> <li>• 480521 Shielded metal Arc Welding (SMAW)</li> <li>• 480522 Gas Metal Arc Welding</li> <li>• 480541 Cooperative Education (Welding) <u>OR</u> 480544 Internship (Welding)</li> </ul> <p style="text-align: center;">Note: (*) Indicates half-credit (.5) course</p>	<p>Combination Welder</p> <p>Pipe Welder</p> <p>Ironworker</p> <p>Tungsten Inert Gas (TIG) Welder</p> <p>Certified Welding</p> <p>Inspector (CWI)</p> <p>Certified Welding Educator (CWE)</p> <p>Welding Engineer</p> <p>Structural Engineer</p> <p>Mechanical Engineer</p>

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**WELDING TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**GAS METAL ARC WELDER  
CIP 48.0508.04**

**PATHWAY DESCRIPTION:** Welds together metal components of products, such as pipelines, automobiles, boilers, ships, aircraft, and mobile homes, as specified by layout, blueprints, diagram, work order, welding procedures, or oral instructions, using electric arc-welding equipment (MIG) process. Knowledgeable in properly setting the gas metal arc welding equipment for the product material required.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480505 Blueprint Reading for Welding OR  
499920 Basic Blueprint Reading\* AND 480503 Basic Welding A\*
- 480523 Oxy-fuel Systems OR  
480501 Cutting Processes
- 480522 Gas Metal Arc Welding

*Choose (1) **ONE CREDIT** from the following:*

- 480533 GMAW Groove Lab
- 480540 GMAW Pipe Lab A
- 480525 Gas Tungsten Arc Welding
- 480534 GMAW Aluminum Lab\*
- 219901 Introduction to Engineering Design (*PLTW*)
- 480541 Cooperative Education (Welding) OR  
480544 Internship (Welding)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Combination Welder  
Pipe Welder  
Ironworker  
Tungsten Inert Gas  
(TIG) Welder  
Certified Welding  
Inspector (CWI)  
Certified Welding  
Educator (CWE)  
Welding Engineer  
Structural Engineer  
Mechanical Engineer

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**WELDING TECHNOLOGY  
CAREER PATHWAYS  
2016-2017**

**SHIELDED METAL ARC WELDER  
CIP 48.0508.06**

**PATHWAY DESCRIPTION:** Shielded metal arc welders work primarily with heavy plate steel and pipe welding in the construction industry, including the building construction and pipeline industries. The oil and gas industry also uses shield metal arc welders for both construction and repair of production facilities. They must set up equipment and welds parts, using the shielded metal arc process (SMAW) while being knowledgeable of the required geometry, physical properties of weld shrinkage and welding techniques.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480505 Blueprint Reading for Welding OR  
499920 Basic Blueprint Reading\* AND 480503 Basic Welding A\*
- 480523 Oxy-fuel Systems OR  
480501 Cutting Processes
- 480521 Shielded Metal Arc Welding (SMAW)

*Choose (1) **ONE CREDIT** from the following:*

- 480528 SMAW Groove Welds with Backing Lab
- 480535 SMAW Open Groove Lab
- 480537 Shielded Metal Arc Welding Pipe Lab B
- 219901 Introduction to Engineering Design (*PLTW*)
- 480541 Cooperative Education (Welding) OR  
480544 Internship (Welding)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Combination Welder  
Pipe Welder  
Ironworker  
Tungsten Inert Gas  
(TIG) Welder  
Certified Welding  
Inspector (CWI)  
Certified Welding  
Educator (CWE)  
Welding Engineer  
Structural Engineer  
Mechanical Engineer

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# WELDING TECHNOLOGY CAREER PATHWAYS 2016-2017

## WELDING TECHNOLOGY TRACK CIP 48.0500.99

**PATHWAY DESCRIPTION:** The Tech Ready Apprentices for Careers in Kentucky (TRACK) youth pre-apprenticeship program is a partnership between the Kentucky Department of Education’s Office of Career and Technical Education and the Kentucky Labor Cabinet to provide secondary students with career pathway opportunities into employers who offer Registered Apprenticeship programs.

Employers are able to tailor the program for their specific needs and select the Career and Technical Education courses and students for their apprenticeship pathway. Employers benefit by gaining future employees that have a good foundation and an interest in that occupation. Additionally, it enables students to receive a nationally recognized credential.

Successful completion is determined by the employer and the student will be awarded an industry certification through The Kentucky Labor Cabinet and all on-the-job hours worked will be counted towards the registered apprenticeship.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS:*

- A minimum of four (4) courses chosen from the partnering technical center’s manufacturing course offerings. These courses are chosen by the employer sponsoring the Registered Apprenticeship. The employer must provide a student co-op opportunity.

Combination Welder  
Pipe Welder  
Ironworker  
Tungsten Inert Gas (TIG) Welder  
Certified Welding Inspector (CWI)  
Certified Welding Educator (CWE)  
Welding Engineer  
Structural Engineer  
Mechanical Engineer

The specifics of the TRACK program vary and interested parties will need to confer with the Office of Career and Technical Education for the implementation process. There are no costs involved in the TRACK program except for student employee wages. For more information, please refer to:  
<http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

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# WELDING TECHNOLOGY CAREER PATHWAYS 2016-2017

## SKILLED TRADES WELDING TRACK CIP 48.0508.99

**PATHWAY DESCRIPTION:** The Welding TRACK is designed as a pre-apprenticeship pathway for students to enter the Registered Apprenticeship training program. Students must successfully complete the four course sequence and 8 safety modules. In addition, each student must pass the Kentucky Department of Transportation (KY DOT) written exam and the KY DOT 3G performance exam OR AWS 2F exam OR AWS Sense exam. Upon completion the student will receive a pre-apprenticeship industry certification issued by the Kentucky Labor Cabinet. This certification will be recognized by participating partners for an interview and possible credit upon placement. Credit is at the discretion of the training organization. For more information or a list of participating organizations, please visit: <http://education.ky.gov/CTE/cter/Pages/TRACK.aspx>

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

***Complete (4) FOUR REQUIRED CREDITS:***

- 480522 Gas Metal Arc Welding (GMAW)
- 480521 Shielded Metal Arc Welding (SMAW)
- 480528 SMAW Groove Welds with Backing Lab
- 480535 SMAW open Groove Lab

***Additional coursework to ENHANCE pathway:***

- 480525 Gas Tungsten Arc Welding
- 480530 GTAW Groove Lab
- 480538 Gas Tungsten Arc Welding Pipe Lab A
- 480595 Special Problems (Welding)

### EXAMPLE ILP-RELATED CAREER TITLES

Combination Welder  
Pipe Welder  
Ironworker  
Tungsten Inert Gas (TIG) Welder  
Certified Welding Inspector (CWI)  
Certified Welding Educator (CWE)  
Welding Engineer  
Structural Engineer  
Mechanical Engineer

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<p style="text-align: center;"><b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND THE WELDING PATHWAY(s)</b></p>
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<p>Upon completion of a pathway, additional coursework to enhance student learning is encouraged.</p>
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<p>Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.</p>
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- |  |
|--|
| <ul style="list-style-type: none"><li>• 480536 Shielded Metal Arc Welding Pipe Lab A</li></ul> |
| <ul style="list-style-type: none"><li>• 480507 Welding Certification</li></ul>                 |
| <ul style="list-style-type: none"><li>• 480599 Special Topics-Welding</li></ul>                |
| <ul style="list-style-type: none"><li>• Career Options</li></ul>                               |
| <ul style="list-style-type: none"><li>• JAG Courses</li></ul>                                  |

**WOOD MANUFACTURING CAREER PATHWAYS  
2016-2017**

**AUTOMATED WOOD PROCESSER  
CIP 48.0703.01**

**PATHWAY DESCRIPTION:** Adjusts, sets up, aligns, cleans machines and performs minor repairs; secures wood into place and sets saws to produce specified sizes of plank and board to be cut; starts machines and feeds stock onto cutting saws, and operates automatic feeding mechanisms; raises and lowers saws to trim boards and remove defects such as rot and splits; controls lathes and slicing machines to produce veneers, and laminates veneers using glue; verifies dimensions of cut stock and accuracy of cuts; checks saws and other machines for safety, sharpness and correct functioning.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480110 Introduction to Computer Aided Drafting
- 480740 Wood Product Manufacturing
- 480711 Introduction to Panel Processing

*Choose (1) **ONE CREDIT** from the following:*

- 480733 Advanced Wood Processing
- 480725 CAD for Wood Technology\*
- 480720 Wood Finishing\*
- 480721 Furniture Technology
- 480716 Lumber Grading and Drying
- 480719 Technical Drawing and Blueprint Reading\*
- 219901 Introduction to Engineering Design (**PLTW**)
- 480741 Co-op I (Wood) OR 480744 Internship (Wood)

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Production Woodworker  
Machine Setter  
Cabinet Maker  
Millworker  
CNC Operator  
Wood Product Supervisor  
Furniture Maker  
Wood Technologist  
Wood Product Engineer

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# WOOD MANUFACTURING CAREER PATHWAYS

2016-2017

## CABINETMAKER

**CIP 48.0703.02**

**PATHWAY DESCRIPTION:** Cabinet makers are specific types of woodworkers who create and install cabinets in bathrooms, kitchens, other areas of homes and businesses. Typical duties of cabinet makers include designing custom cabinets, making cabinets, installing cabinetry, consulting with clients and other duties as needed. Cabinet makers are responsible for cutting and shaping wood, preparing surfaces and forming a completed product.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480719 Technical Drawing and Blueprint Reading\* AND 480720 Wood Finishing\*
- 480740 Wood Product Manufacturing
- 480731 Cabinet Making Technology

*Choose (1) **ONE CREDIT** from the following:*

- 480733 Advanced Wood Processing
- 480725 CAD for Wood Technology\*
- 480721 Furniture Technology
- 480110 Introduction to Computer Aided Drafting
- 480716 Lumber Grading and Drying
- 219901 Introduction to Engineering Design (*PLTW*)
- 480741 Co-op I (Wood) OR 480744 Internship (Wood)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Production Woodworker  
Machine Setter  
Millworker  
CNC Operator  
Wood Product Supervisor  
Furniture Maker  
Wood Technologist  
Wood Product Engineer

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**WOOD MANUFACTURING CAREER PATHWAYS  
2016-2017**

**FURNITURE MAKER  
CIP 48.0703.03**

**PATHWAY DESCRIPTION:** Furniture makers are specific types of woodworkers who design and create furniture for homes and businesses. Typical duties of furniture makers include designing custom furniture, making furniture, and consulting with clients to meet their specifications. Furniture makers are responsible for cutting and shaping wood, preparing surfaces and forming a completed product.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480719 Technical Drawing and Blueprint Reading\* AND 480720 Wood Finishing\*
- 480740 Wood Product Manufacturing
- 480721 Furniture Technology

*Choose (1) **ONE CREDIT** from the following:*

- 480733 Advanced Wood Processing
- 480725 CAD for Wood Technology\*
- 480110 Introduction to Computer Aided Drafting
- 480716 Lumber Grading and Drying
- 219901 Introduction to Engineering Design (*PLTW*)
- 480741 Co-op I (Wood) OR 480744 Internship (Wood)

Note: (*PLTW*) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Production Woodworker  
Machine Setter  
Cabinet Maker  
Millworker  
CNC Operator  
Wood Product Supervisor  
Wood Technologist  
Wood Product Engineer

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**WOOD MANUFACTURING CAREER PATHWAYS  
2016-2017**

**MILLWORKER  
CIP 48.0703.04**

**PATHWAY DESCRIPTION:** Furniture makers are specific types of woodworkers who design and create furniture for homes and businesses. Typical duties of furniture makers include designing custom furniture, making furniture, and consulting with clients to meet their specifications. Furniture makers are responsible for cutting and shaping wood, preparing surfaces and forming a completed product.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480719 Technical Drawing and Blueprint Reading\* AND 480720 Wood Finishing\*
- 480716 Lumber Grading and Drying
- 480717 Millwork Technology

*Choose (1) **ONE CREDIT** from the following:*

- 480733 Advanced Wood Processing
- 480725 CAD for Wood Technology\*
- 480110 Introduction to Computer Aided Drafting
- 480740 Wood Product Manufacturing
- 480721 Furniture Technology
- 219901 Introduction to Engineering Design (*PLTW*)
- 480741 Co-op I (Wood) OR 480744 Internship (Wood)

Note: (*PLTW*) courses require an agreement between Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Production Woodworker  
Machine Setter  
Cabinet Maker  
CNC Operator  
Wood Product Supervisor  
Furniture Maker  
Wood Technologist  
Wood Product Engineer

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# WOOD MANUFACTURING CAREER PATHWAYS

2016-2017

## WOOD CNC OPERATOR/PROGRAMMER

**CIP 48.0703.05**

**PATHWAY DESCRIPTION:** CNC Operators and Programmers set up, program, operate, or tend computerized or manual woodworking machines, such as drill presses, lathes, shapers, routers, sanders, planers, or wood-nailing machines to produce parts from a variety of materials. They must monitor operation of machines and make adjustments to correct problems and ensure conformance to specifications. They must be proficient using inspection tooling (i.e., micrometers, calipers, gages) to accurately measure part features.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 480719 Technical Drawing and Blueprint Reading\* AND 480720 Wood Finishing\*
- 480110 Introduction to Computer Aided Drafting
- 480733 Advanced Wood Processing

*Choose (1) **ONE CREDIT** from the following:*

- 480716 Lumber Grading and Drying
- 480717 Millwork Technology
- 480733 Advanced Wood Processing
- 480725 CAD for Wood Technology\*
- 480740 Wood Product Manufacturing
- 480721 Furniture Technology
- 219901 Introduction to Engineering Design (*PLTW*)
- 480741 Co-op I (Wood) OR 480744 Internship (Wood)

Note: (PLTW) courses require an agreement between  
Project Lead the Way and the Local School District.

Note: (\*) Indicates half-credit (.5) course

Production Woodworker  
Machine Setter  
Cabinet Maker  
Millworker  
Wood Product Supervisor  
Furniture Maker  
Wood Technologist  
Wood Product Engineer

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<p style="text-align: center;"><b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND WOOD MANUFACTURING PATHWAY(s)</b></p>
<p>Upon completion of a pathway, additional coursework to enhance student learning is encouraged.</p> <p>Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.</p>
<ul style="list-style-type: none"><li>• 480718 Moulder/Grinder Oper.</li></ul>
<ul style="list-style-type: none"><li>• 480795 Special Problems (for Wood Manufacturing)</li></ul>
<ul style="list-style-type: none"><li>• 480799 Special Topics – Wood Manufacturing Technology</li></ul>
<ul style="list-style-type: none"><li>• Career Options</li></ul>
<ul style="list-style-type: none"><li>• JAG Courses</li></ul>

# **MEDIA ARTS**

**MEDIA ARTS CAREER PATHWAYS  
2016-2017**

**CINEMATOGRAPHY AND VIDEO PRODUCTION PATHWAY  
CIP 09.0701.00**

**PATHWAY DESCRIPTION:** This career pathway prepares students to communicate dramatic information, ideas, moods, and feelings through the making and producing of videos and cinematographic expression. The pathway includes the theory of video, video technology and equipment operation, video production, video directing, video editing, cinematographic art, video and audio technique, and multi-media production. It prepares students to function as staff, producers, directors, and managers of media programming and media organizations. Includes writing and editing; performing; media regulations, law, and policy; aesthetic meaning, appreciation and analysis; construction, development, processing, modeling, simulation and programming of audio and moving image programs and messages; their transmission, distribution and marketing, as well as contextual, cultural and historical aspects and considerations.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 480901 Introduction to Media Arts</li> <li>• 480910 Video Studio Fundamentals</li> <li>• 480911 Studio Directing and Performance</li> <li>• 480912 Advanced Studio Production (Moving Image)</li> </ul>	<p>Advertising Copywriter</p> <p>Audio-Visual Technician</p> <p>Broadcast Technician</p> <p>Camera Operator</p> <p>Director</p> <p>Director of Photography</p> <p>Film and TV Crew</p> <p>Film Editor</p> <p>Photographer</p> <p>Photojournalist</p> <p>Radio / Television Program Director</p>

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**MEDIA ARTS CAREER PATHWAYS  
2016-2017**

**GRAPHIC DESIGN PATHWAY  
CIP 50.0401.00**

**PATHWAY DESCRIPTION:** This Career Pathway prepares students to apply Media Arts skills that focus on the general principles and techniques for effectively communicating ideas and information, and packaging products, in digital and other formats to business and consumer audiences, and that may prepare individuals in any of the applied art media, including: aesthetic meaning, appreciation and analysis; construction, development, processing, modeling, simulation and programming of interactive experiences; their transmission, distribution and marketing, as well as contextual, cultural and historical aspects and considerations.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 480901 Introduction to Media Arts
- 480920 Two-Dimensional Media
- 480921 Digital Imaging
- 480922 Advanced Production Design

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Advertising Account Executive  
Advertising Copywriter  
Art Director  
Graphic Designer  
Sign Maker  
Visual Merchandiser

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# MEDIA ARTS CAREER PATHWAYS

## 2016-2017

### INTERACTIVE MEDIA ARTS

#### CIP 10.0304.00

**PATHWAY DESCRIPTION:** This Career Pathway prepares students to use computer applications and related visual and sound imaging techniques to manipulate images and information originating as video, still photographs, digital copy, soundtracks, and physical objects in order to communicate messages simulating real-world content. Includes instruction in specialized camerawork and equipment operation and maintenance, image capture, computer applications, dubbing, and applications to specific commercial, industrial, and entertainment needs, including: aesthetic meaning, appreciation and analysis; construction, development, processing, modeling, simulation and programming of interactive experiences; their transmission, distribution and marketing, as well as contextual, cultural and historical aspects and considerations.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p style="padding-left: 40px;"><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 480901 Introduction to Media Arts</li> <li>• 480902 Interactive Design</li> <li>• 480903 Moving Image, Animation</li> <li>• 480904 Virtual Design</li> </ul>	<p>Advertising Account Executive</p> <p>Advertising Copywriter</p> <p>Art Director</p> <p>Audio-Visual Technician</p> <p>Broadcast Technician</p> <p>Camera Operator</p> <p>Computer Animator</p> <p>Director of Photography</p> <p>Film and TV Crew</p> <p>Film Editor</p> <p>Graphic Designer</p> <p>Photographer</p> <p>Website Designer</p>

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# **PRINT TECHNOLOGY**

# PRINT TECHNOLOGY CAREER PATHWAYS

2016-2017

## PRE-PRESS CIP 10.0303.00

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to the layout, design and typographic arrangement of printed and/or electronic graphic and textual products. Includes instruction in printing and lithographic equipment and operations, computer hardware and software, digital imaging, print preparation, page layout and design, desktop publishing, and applicable principles of graphic design.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (2) TWO CREDITS from the following:*

- 480328 Computer Fundamentals
- 480325 Graphic Communication

*Choose (2) TWO CREDITS from the Following:*

- 480323 Computer Layout and Design
- 480324 Typography
- 480329 Digital Production
- 480301 COOP OR  
480304 Internship

Graphic Designers

Prepress Technicians

Book Cover Designers

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# PRINT TECHNOLOGY CAREER PATHWAYS

2016-2017

## PRINTING AND FINISHING

CIP 10.0305.00

**PATHWAY DESCRIPTION:** A program that generally prepares individuals to apply technical knowledge and skills to plan, prepare, and execute a variety of commercial and industrial graphic communications jobs. Includes instruction in the operation and maintenance of mechanical, electronic, and digital graphic, printing, and finishing equipment; and related processes.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Choose (2) TWO CREDITS from the following:*

- 480328 Computer Fundamentals
- 480325 Graphic Communication

*Choose (2) TWO CREDITS from the following:*

- 480321 Press 1
- 480330 Finishing and Binding
- 480301 COOP OR  
480304 Internship

Cylinder Press Set-Up  
Operator  
Flat-Bed Press Set-Up  
Operator  
Job Printer  
Lithographic Printer  
Newspaper Press  
Operator  
Offset Printer

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# TRANSPORTATION

**TRANSPORTATION EDUCATION CAREER PATHWAYS  
2016-2017**

**AUTOMOTIVE MAINTENANCE AND LIGHT REPAIR  
TECHNICIAN  
CIP 47.0604.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 470507 Automotive Maintenance and Light Repair Section A and Lab</li> <li>• 470509 Automotive Maintenance and Light Repair Section B and Lab</li> <li>• 470511 Automotive Maintenance and Light Repair Section C and Lab</li> <li>• 470513 Automotive Maintenance and Light Repair Section D and Lab</li> </ul> <p>These courses can be taken in ANY order. There are NO prerequisites required to enter these classes.</p> <p>Example: “Section “D” can be taken before Section “A”. “Section “C” can be taken before Section “B”.</p>	<p>Entry Level Auto Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Auto Sales Rep</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## AUTOMOBILE SERVICE TECHNICIAN CIP Code: 47.0604.02

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the Automobile Maintenance and Light Repair Technician Pathway</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470515 Automobile Service Technology Section A and Lab</li> <li>• 470517 Automobile Service Technology Section B and Lab</li> <li>• 470519 Automobile Service Technology Section C and Lab</li> <li>• 470521 Automobile Service Technology Section D and Lab</li> </ul> <p>These courses can be taken in ANY order.</p> <p>Example:                      “Section “D” can be taken before Section “A.”                      “Section “C” can be taken before Section “B”</p>	<p>Auto Technician/Line Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Auto Sales Rep</p> <p>Shop Foreman</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## MASTER AUTOMOBILE SERVICE TECHNICIAN CIP Code: 47.0604.03

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (8) <b>EIGHT CREDITS</b> in the Automobile Maintenance and Light Repair Technician Pathway AND the Automobile Service Technology Pathway.</i></p> <p><i>Complete (2) <b>TWO CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470523 Master Automobile Service Technology Section A and Lab</li> <li>• 470525 Master Automobile Service Technology Section B and Lab</li> </ul> <p>These Master Automobile Service Technology courses can be taken in ANY order.</p> <p>Example: “Section “B” can be taken before Section “A”.</p>	<p>Auto Technician/Line Technician/Specialty Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Auto Sales Rep</p> <p>Shop Foreman</p> <p>Auto Field Engineer</p> <p>Auto Instructor</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## ENTRY LEVEL BRAKES AND SUSPENSION TECHNICIAN (Option only available for Programs Still Certified under the 2008 ASE/NATEF Standards.) CIP Code: 47.0604.04

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in brake systems, electrical systems, and suspension and steering systems

<b>BEST PRACTICE COURSES</b>	<b>ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470550 Brakes and Lab</li> <li>• 470553 Suspension and Steering and Lab</li> <li>• 470556 Basic Automotive Electricity and Lab</li> </ul> <p>Note: The above courses in this Pathway may be taken in any order (Basic Automotive Electricity and Lab is a prerequisite to Electrical Systems and Lab)</p> <p><i>Complete (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470562 Electrical Systems and Lab</li> </ul>	<p>Brake Technician</p> <p>Front End Technician</p> <p>Brake and Suspension Technician</p> <p>Auto Electric Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Auto Sales Rep</p> <p>Shop Foreman</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## ENTRY LEVEL ENGINE PERFORMANCE TECHNICIAN (Option only available for Programs Still Certified under the 2008 ASE/NATEF Standards) CIP Code: 47.0604.05

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Includes instruction in electrical systems, engine performance, and engine repair systems

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDIT from the following as prerequisite for pathway:*

- 470556 Basic Automotive Electricity and Lab

*Complete (4) FOUR CREDITS from the following:*

- 470562 Electrical Systems and Lab
- 470558 Basic Fuel and Ignition Systems and Lab
- 470564 Emission Systems Lab
- 470560 Computer Control Systems and Lab

Note: The Courses in this Pathway may be taken in any order.

### EXAMPLE ILP-RELATED CAREER TITLES

Drivability Technician  
Auto Electric Technician  
Auto Engine Repair Technician  
Service Advisor  
Dispatcher  
Warranty Clerk  
Auto Sales Rep  
Shop Foreman  
Service Manager

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**TRANSPORTATION EDUCATION CAREER PATHWAYS  
2016-2017**

**AUTOMOTIVE ENGINEERING/AUTOMOTIVE  
MAINTENANCE AND LIGHT REPAIR**

**CIP Code: 15.0803.00**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing self-propelled ground vehicles and their systems. Includes instruction in vehicular systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance, and report preparation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER  
TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (2) TWO CREDITS from the following as prerequisite to the pathway:*

- 219901 Introduction to Engineering Design (*PLTW*)
- 219903 Digital Electronics (PLTW)

*Complete (4) FOUR CREDITS from the following:*

- 470507 Automotive Maintenance and Light Repair Section A and Lab
- 470509 Automotive Maintenance and Light Repair Section B and Lab
- 470511 Automotive Maintenance and Light Repair Section C and Lab
- 470513 Automotive Maintenance and Light Repair Section D and Lab

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.

Automotive Engineer  
Service Advisor  
Dispatcher  
Warranty Clerk  
Auto Sales Rep  
Service Manager

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND AUTOMOTIVE TECHNOLOGY PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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470580 Engine Repair and Lab
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470547 Climate Control and Lab
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470570 Automatic Transmission/Transaxle and Lab
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470582 Manual Drivetrains and Axles and Lab
---

470501 Co-Op I
----------------

499930 Industrial Safety
--------------------------

060170 Personal Financial Management
--------------------------------------

470504 Automotive Internship I
--------------------------------

470546 Precision Measurement
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470301 Shop Management*
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470577 Special Problems I (Auto)
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470578 Special Problems II (Auto)
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470579 Special Problems III (Auto)
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470584 Special Problems IV (Auto)
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Note: (\*) Indicates half-credit (.5) course

# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## ENTRY LEVEL COLLISION REPAIR PAINTER CIP Code: 47.0603.01

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. Includes instruction in damage repair, painting and refinishing techniques, and damage analysis and estimating.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3.5) <b>THREE &amp; ONE- HALF CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470639 Painting and Refinishing I and Lab</li> <li>• 470640 Painting and Refinishing II and Lab</li> <li>• 470645 Painting and Refinishing III and Lab</li> <li>• 470628 Damage Analysis, Estimating and Customer Service*</li> </ul> <p><i>Complete (.5) <b>ONE- HALF CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470647 Painting and Refinishing Special Problems* <u>OR</u> 470631 Intro to Collision Repair*</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Collision Repair/Painter Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Service Manager</p> <p>Auto Sales Rep</p> <p>Adjuster</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## ENTRY LEVEL STRUCTURAL ANALYSIS AND DAMAGE REPAIR TECHNICIAN CIP Code: 47.0603.02

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. Includes instruction in structure analysis, damage repair, non-structural analysis, plastics and adhesives, and damage analysis and estimating.

BEST PRACTICE COURSES	ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) FOUR CREDITS from the Nonstructural Damage and Repair Technician Pathway.</i></p> <p><i>Complete (4) FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 470620 Structural Analysis and Damage Repair I and Lab</li> <li>• 470622 Structural Analysis and Damage Repair II and Lab</li> <li>• 470628 Damage Analysis, Estimating and Customer Service* <u>AND</u> 470677 Special Projects I Collision Repair* <u>OR</u> 470631 Intro to Collision Repair*</li> <li>• 470678 Special Projects II Collision Repair</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Collision Repair/Structural Repair Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Service Manager</p> <p>Auto Sales Rep</p> <p>Adjuster</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## ENTRY LEVEL NON-STRUCTURAL DAMAGE AND REPAIR TECHNICIAN CIP Code: 47.0603.03

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. Includes instruction in damage repair, non-structural analysis, plastics and adhesives, and damage analysis and estimating.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (4) <b>FOUR CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470633 Non-Structural Analysis and Damage Repair I and Lab</li> <li>• 470644 Non-Structural Analysis and Damage Repair II and Lab</li> <li>• 470649 Non-Structural Analysis and Damage Repair III and Lab</li> <li>• 470628 Damage Analysis, Estimating and Customer Service</li> <li>• 470651 Non-Structural Analysis and Damage Repair Special Problems I* <u>OR</u> 470631 Intro to Collision Repair*</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Collision Repair/ Non- Structural Repair Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Service Manager</p> <p>Auto Sales Rep</p> <p>Adjuster</p>

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## TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

### ENTRY LEVEL MECHANICAL AND ELECTRICAL REPAIR TECHNICIAN CIP Code: 47.0603.04

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. Includes instruction in damage repair, mechanical and electrical components, and damage analysis and estimating.

#### BEST PRACTICE COURSES

#### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 470631 Intro to Collision Repair\*
- 470628 Damage Analysis, Estimating and Customer Service\*
- 470642 Mechanical and Electrical Components I and Lab
- 470653 Mechanical and Electrical Components II and Lab
- 470678 Special Projects Collision Repair II

Note: (\*) Indicates half-credit course

Collision Repair/Mechanical  
And Electrical Technician  
Service Advisor  
Dispatcher  
Warranty Clerk  
Service Manager  
Auto Sales Rep  
Adjuster

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND COLLISION REPAIR TECHNOLOGY PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.

Credits earned in Advanced or Complementary Coursework "Beyond the Pathway" may not be substituted for pathway courses in order to achieve Preparatory or Completer status.

470652 Non-Structural Damage and Repair Special Problems Lab
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470601 Co-Op I Collision Repair
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499930 Industrial Safety
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060170 Personal Financial Management
--------------------------------------

470604 Collision Repair Internship I
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470679 Special Projects III Collision Repair
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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## DIESEL BRAKE REPAIRER/BASIC AUTOMOTIVE ELECTRICITY OPTION CIP Code: 47.0605.01

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 470422 Brakes (Diesel) and Lab
- 470556 Basic Automotive Electricity and Lab
- 470425 Electrical Systems for Diesel Equipment and Lab
- 470406 Mechanical Concepts\* AND  
470403 Preventive Maintenance and Lab\*

Note: (\*) Indicates half-credit course

### EXAMPLE ILP-RELATED CAREER TITLES

Entry Level Diesel  
Brake Technician  
  
Service Advisor  
  
Dispatcher  
  
Warranty Clerk  
  
Diesel Sales Rep  
  
Service Manager

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## TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

### DIESEL ENGINE/ELECTRICIAN TECHNICIAN BASIC AUTOMOTIVE ELECTRICITY OPTION CIP Code: 47.0605.02

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

BEST PRACTICE COURSES	EXAMPLE ILP-RELATED CAREER TITLES
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) <b>TWO CREDITS</b> from the following as prerequisite to the pathway:</i></p> <ul style="list-style-type: none"> <li>• 470406 Mechanical Concepts* <u>AND</u> 470403 Preventive Maintenance and Lab*</li> <li>• 470556 Basic Automotive Electricity and Lab</li> </ul> <p><i>Complete (3) <b>THREE CREDITS</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 470425 Electrical Systems for Diesel Equipment and Lab</li> <li>• 470421 Intro to Diesel Engines and Lab</li> <li>• 470423 Diesel Engine Repair and Lab</li> </ul> <p>Note: (*) Indicates half-credit course</p>	<p>Entry Level Diesel Engine Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Diesel Sales Rep</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## DIESEL FRONT END MECHANIC BASIC AUTOMOTIVE ELECTRICITY OPTION. CIP Code: 47.0605.03

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) FOUR CREDITS from the following:*

- 470556 Basic Automotive Electricity and Lab
- 470425 Electrical Systems for Diesel Equipment
- 470424 Steering and Suspension (Diesel)
- 470406 Mechanical Concepts\*
- 470403 Preventive Maintenance and Lab\*

Note: (\*) Indicates half-credit course

Entry Level Front End  
Diesel Technician

Service Advisor

Dispatcher

Warranty Clerk

Diesel Sales Rep

Service Manager

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**TRANSPORTATION EDUCATION CAREER PATHWAYS  
2016-2017**

**DIESEL BRAKE REPAIRER  
SPECIAL PROBLEMS OPTION  
CIP Code: 47.0605.04**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 470422 Brakes (Diesel) and Lab
- 470477 Special Problems 1 (Diesel)
- 470425 Electrical Systems for Diesel Equipment and Lab
- 470406 Mechanical Concepts\*
- 470403 Preventive Maintenance and Lab\*

Note: (\*) Indicates half-credit course

Entry Level Diesel  
Brakes Technician  
  
Service Advisor  
  
Dispatcher  
  
Warranty Clerk  
  
Diesel Sales Rep  
  
Service Manager

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## DIESEL ENGINE/ELECTRICIAN TECHNICIAN PREVENTIVE MAINTENANCE OPTION CIP Code: 47.0605.05

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 470425 Electrical Systems for Diesel Equipment and Lab
- 470421 Intro to Diesel Engines and Lab
- 470423 Diesel Engine Repair and Lab
- 470406 Mechanical Concepts\*
- 470403 Preventive Maintenance and Lab\*

Note: (\*) Indicates half-credit course

Entry Level Diesel  
Engine/Electrical  
Technician

Service Advisor

Dispatcher

Warranty Clerk

Diesel Sales Rep

Service Manager

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## DIESEL FRONT END MECHANIC SPECIAL PROBLEMS OPTION CIP Code: 47.0605.06

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

### BEST PRACTICE COURSES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (4) **FOUR CREDITS** from the following:*

- 470477 Special Problems 1 (Diesel)
- 470425 Electrical Systems for Diesel Equipment and Lab
- 470424 Steering and Suspension (Diesel) and Lab
- 470406 Mechanical Concepts\*
- 470403 Preventive Maintenance and Lab\*

Note: (\*) Indicates half-credit course

### EXAMPLE ILP-RELATED CAREER TITLES

Entry Level Diesel  
Front End/Electrical  
Technician

Service Advisor

Dispatcher

Warranty Clerk

Diesel Sales Rep

Service Manager

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND DIESEL TECHNOLOGY PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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470438 Climate Control (Diesel) and Lab
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470426 Hydraulics (Diesel) and Lab
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470427 Powertrain (Diesel) and Lab
------------------------------------

470442 Co-Op (Diesel)
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499930 Industrial Safety
--------------------------

060170 Personal Financial Management
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470445 Internship I (Diesel)
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470546 Precision Measurement
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470478 Special Problems II (Diesel)
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470479 Special Problems III (Diesel)
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Career Options
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JAG Courses
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**TRANSPORTATION EDUCATION CAREER PATHWAYS  
2016-2017**

**OUTDOOR POWER EQUIPMENT AND SMALL ENGINE MECHANIC  
CIP Code 47.0606.01**

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain small internal-combustion engines used on portable power equipment such as lawnmowers, chain saws, rotary tillers, and snowmobiles.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (2) TWO CREDITS from the following as prerequisites:</i></p> <ul style="list-style-type: none"> <li>• 470821 Small Engine Repair I and Lab</li> <li>• 470812 Small Engine Repair II and Lab</li> </ul> <p><i>Complete (4) FOUR CREDITS from the following:</i></p> <ul style="list-style-type: none"> <li>• 470822 Two Stroke Cycle Engine (Small Engine) And Lab</li> <li>• 470814 Four Stoke Cycle Engine (Small Engine) And Lab</li> <li>• 470840 Small Engine Electrical Systems And Lab</li> <li>• 470816 Small Engine Repair/Failure And Analysis And Lab</li> </ul>	<p>Entry Level Small Engine Technician</p> <p>Service Advisor</p> <p>Dispatcher</p> <p>Warranty Clerk</p> <p>Sales Rep</p> <p>Service Manager</p>

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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## SMALL ENGINE MECHANIC CIP Code 47.0606.02

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain small internal-combustion engines used on portable power equipment such as lawnmowers, chain saws, rotary tillers, and snowmobiles.

### BEST PRACTICE COURSES

### EXAMPLE ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDIT from the following as a prerequisite to pathway:*

- 470821 Small Engine Repair I and Lab

*Complete (4) FOUR CREDITS from the following:*

- 470812 Small Engine Repair II And Lab
- 470814 Four Stoke Cycle Engine (Small Engine) And Lab
- 470822 Two Stroke Cycle Engine (Small Engine) And Lab
- 470840 Small Engine Electrical Systems And Lab

Entry Level  
Small

Engine  
Technician

Service Advisor

Dispatcher

Warranty Clerk

Sales Rep

Service Manager

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND SMALL ENGINE REPAIR PATHWAY(s)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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470816 Small Engine Repair/Failure And Analysis and Lab
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470801 Co-Op I (Small Engine Repair)
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470805 Small Engine Internship
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# TRANSPORTATION EDUCATION CAREER PATHWAYS 2016-2017

## MOTORCYCLE MAINTENANCE AND REPAIR TECHNICIAN CIP 47.0611.00

**PATHWAY DESCRIPTION:** A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain motorcycles and other similar powered vehicles. Includes instruction in lubrication and cooling systems, electrical and ignition systems, carburetion, fuel systems and adjustments of moving parts.

### BEST PRACTICE COURSES

### ILP-RELATED CAREER TITLES

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (1) ONE CREDITS from the following:*

- 470840 Small Engine Electrical Systems and Lab

*Choose (3) THREE CREDITS from the following:*

- 470848 Advanced Engines /Drive Systems & Lab  
(Motorcycle/Powersports)
- 470845 Basic Engines / Drive Systems & Lab  
(Motorcycle/Powersports)
- 470847 Diagnostic and Troubleshooting & Lab  
(Motorcycle/Powersports)
- 470846 Frames and Suspensions & Lab  
(Motorcycle/Powersports)

Entry Level  
Powersports/Motorcycle  
Technician  
Service Advisor  
Dispatcher  
Warranty Clerk  
Sales Rep  
Service Manager

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<b>COMPLEMENTARY OR ADVANCED COURSEWORK BEYOND POWERSPORTS/MOTOCYCLE PATHWAY(S)</b>
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Upon completion of a pathway, additional coursework to enhance student learning is encouraged.
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Credits earned in Advanced or Complementary Coursework “Beyond the Pathway” may not be substituted for pathway courses in order to achieve Preparatory or Completer status.
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470849 Performance Machining/Welding and Lab
--

470844 Introduction to Motorcycles
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470852 Co-Op Powersports/Motorcycle Technology
--

470853 Internship Powersports Motorcycle Technology
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**JUNIOR RESERVES OFFICER TRAINING CORPS  
JROTC**

**JUNIOR RESERVE OFFICERS' TRAINING CORPS  
CAREER PATHWAYS  
2016-2017**

**Air Force JROTC  
CIP 28.0101.00**

**PATHWAY DESCRIPTION:** A program that introduces students to the theory and practice of air science, life in the U.S. Air Force, and prepares them for cadet status (Junior ROTC or JROTC) or for service as commissioned reserve or active duty officers (senior AFROTC or ROTC). Programs are offered as adjuncts to regular high school instructional programs.

<b>BEST PRACTICE COURSES</b>	<b>ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (3) <b>THREE CREDITS:</b></i></p> <ul style="list-style-type: none"> <li>• 580134 Air Force JROTC1</li> <li>• 580135 Air Force JROTC2</li> <li>• 580136 Air Force JROTC3</li> </ul> <p><i>Choose (1) <b>ONE CREDIT</b> from the following:</i></p> <ul style="list-style-type: none"> <li>• 580137 Air Force JROTC4 <u>OR</u></li> <li>• 580138 Air Force JROTC Leadership</li> </ul>	<p>Administrative Personnel</p> <p>Construction Personnel</p> <p>Electronic And Electrical Equipment Repair Personnel</p> <p>Engineering, Science, And Technical Personnel</p> <p>Healthcare Personnel</p> <p>Media And Public Affairs Personnel</p> <p>Transportation And Material-Handling Personnel</p>

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**JUNIOR RESERVE OFFICERS' TRAINING CORPS  
CAREER PATHWAYS  
2016-2017**

**ARMY JROTC  
CIP 28.0301.00**

**PATHWAY DESCRIPTION:** A program that introduces students to the theory and practice of military science, life in the U.S. Army, and prepares them for cadet status (Junior **ROTC** or **JROTC**) or for service as commissioned reserve or active duty officers (senior **AROTC** or **ROTC**). Programs are offered as adjuncts to regular high school instructional programs.

**BEST PRACTICE COURSES**

**ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 580240 Army Junior ROTC Level I
- 580241 Army Junior ROTC Level II
- 580242 Army Junior ROTC Level III

*Choose (1) **ONE CREDIT** from the Following:*

- 580243 Army Junior ROTC Level IV OR
- 580244 Army Junior ROTC Leadership

Administrative Personnel  
Construction Personnel  
Electronic And Electrical  
Equipment Repair Personnel  
Engineering, Science, And  
Technical Personnel  
Healthcare Personnel  
Media And Public Affairs  
Personnel  
Transportation And  
Material-Handling  
Personnel

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**JUNIOR RESERVE OFFICERS' TRAINING CORPS  
CAREER PATHWAYS  
2016-2017**

**NAVY JROTC  
CIP 28.0401.01**

**PATHWAY DESCRIPTION:** A program that introduces students to the theory and practice of naval science, life in the U.S. Navy and prepares them for cadet status (Junior ROTC or JROTC) or for service as commissioned reserve or active duty officers (senior NROTC or ROTC). Programs are offered as adjuncts to regular high school instructional programs.

**BEST PRACTICE COURSES**

**ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 580310 Navy JROTC1
- 580311 Navy JROTC2
- 580312 Navy JROTC3

*Choose (1) **ONE CREDIT** from the following:*

- 580313 Navy JROTC4 OR
- 580314 Navy JROTC Leadership

Administrative Personnel  
Construction Personnel  
Electronic And Electrical  
Equipment Repair Personnel  
Engineering, Science, And  
Technical Personnel  
Healthcare Personnel  
Media And Public Affairs  
Personnel  
Transportation And  
Material-Handling  
Personnel

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**JUNIOR RESERVE OFFICERS' TRAINING CORPS  
CAREER PATHWAYS  
2016-2017**

**MARINE CORPS JROTC  
CIP 28.0401.02**

**PATHWAY DESCRIPTION:** A program that introduces students to the theory and practice of naval science, life in the U.S. Marine Corps, and prepares them for cadet status (Junior **ROTC** or **JROTC**) or for service as commissioned reserve or active duty officers (senior **NROTC** or **ROTC**). Programs are offered as adjuncts to regular high school or college instructional programs.

**BEST PRACTICE COURSES**

**ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (3) **THREE CREDITS:***

- 580320 Marine Corps JROTC1
- 580321 Marine Corps JROTC1
- 580322 Marine Corps JROTC1

*Choose (1) **ONE CREDIT** from the following:*

- 580323 Marine Corps JROTC1 OR
- 580324 Marine Corps JROTC Leadership

Administrative Personnel  
Construction Personnel  
Electronic And Electrical  
Equipment Repair Personnel  
Engineering, Science, And  
Technical Personnel  
Healthcare Personnel  
Media And Public Affairs  
Personnel  
Transportation And  
Material-Handling  
Personnel

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**CAREER & TECHNICAL EDUCATION (CTE)**

**&**

**PROJECT LEAD THE WAY (PLTW)**

**HYBRID PATHWAYS**

**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**DESIGN ENGINEERING  
CIP 15.1304.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Design Engineers have a working knowledge of mechanical parts as well as computer-aided design (CAD) software, such as AutoCAD. Mechanical designers begin a project by meeting with project managers, engineers, and clients to understand the needs and requirements for a new product or mechanical system. For example, designers working on a project to create an automobile engine may consult engineers regarding which structural materials to use or clients regarding engine efficiency requirements. Once materials and specifications have been determined, designers begin using CAD software to plan and develop models.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 480110 Introduction to Computer Aided Drafting
- 480136 Parametric Modeling
- 480113 Engineering Graphics
- 219906 Engineering Design & Development (*PLTW*) OR  
219902 Principles of Engineering (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Engineer Technician  
Electrical Engineer  
Industrial Engineer  
Mechanical Engineer  
Civil Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**COMPUTERIZED MANUFACTURING AND  
MACHINING (CMM) ENGINEERING  
CIP 48.0510.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. CMM Engineers design, develop and run programs which direct machines to cut and shape metal or plastic for such things as airplanes, automobiles and other industrial machines. CMM Engineers use blueprints and 3-dimensional computer designs to create the programs which result in precisely cut products.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) **FIVE CREDITS** from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 470913 Fundamentals of Machine Tools-A
- 470914 Fundamentals of Machine Tools-B
- 470915 Manual Programming
- 219904 Computer Integrated Manufacturing (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Machine Operator  
Machinist Technician  
Machinist  
Maintenance Machinist  
CNC Machine Operator  
CNC Programmer  
Quality Control Manager  
Mechanical Engineer  
Engineer Technician  
Industrial Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**WELDING ENGINEERING  
CIP 15.0614.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Welding Engineers design and develop metal components for products for the pipeline, automotive, boiler making, ship building, aircraft and mobile home industry. Welding Engineers must have knowledge of cutting processes and gas metal arc welding procedures for efficient development of these industrial processes.

<b>BEST PRACTICE COURSES</b>	<b>EXAMPLE ILP-RELATED CAREER TITLES</b>
<p><i>Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification)</i></p> <p><i>Complete (5) FIVE CREDITS from the following :</i></p> <ul style="list-style-type: none"> <li>• 219901 Introduction to Engineering Design (<i>PLTW</i>)</li> <li>• 480505 Blueprint Reading for Welding</li> <li>• 480501 Cutting Processes</li> <li>• 480522 Gas Metal Arc Welding</li> <li>• 219902 Principles of Engineering (<i>PLTW</i>)</li> </ul> <p>Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to <a href="#">PLTW Program Requirements</a> for further information.</p>	<p>Pipe Welder</p> <p>Certified Welding Inspector (CWI)</p> <p>Certified Welding Educator (CWE)</p> <p>Welding Engineer</p> <p>Structural Engineer</p> <p>Mechanical Engineer</p>

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**ELECTRICAL ENGINEERING  
CIP 14.4101.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Electrical Engineers apply electrical theory and related knowledge to diagnose and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories. Electrical Engineers experiment with motor-control devices, switch panels, transformers, generator windings, solenoids, and other electrical equipment and components according to engineering data and knowledge of electrical principles.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 470322 Industrial Maintenance Electrical Principles
- 470348 Industrial Maintenance Electrical Motor Controls
- 470330 Industrial Maintenance of PLC
- 219903 Digital Electronics (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Electrical Technician  
Electrical Supervisor  
Electrical Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**FLUID POWER ENGINEERING  
CIP 15.1103.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Fluid Power Engineers design, fabricate, and test industrial hydraulic equipment. Fluid Power Engineers apply knowledge of hydraulic, pneumatic, and electrical principles to test equipment, and analyzes and records data, such as fluid pressure, flow measure, and power loss due to friction and parts wear. Fluid Power Engineers understand hydraulic symbols, reads system schematics, understands electrical principles, and is skilled in test procedures and instrumentation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 470321 Fluid Power
- 470316 Advanced Hydraulic Systems
- 470326 Pneumatic Systems
- 219902 Principles of Engineering (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Industrial Hydraulic Technician  
Mechanical Engineer  
Industrial Engineer  
Pneumatic Specialist  
Fluid Power Supervisor  
Hydraulic Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**FABRICATION ENGINEERING  
CIP 14.1901.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend PLTW courses and CTE courses to promote training with applied technical skills and the science, technology, engineering and math required to solve real-world problems. The Fabrication Engineer design parts to engineering specifications that are required for the development of metal parts and interior metal structures. Fabrication Engineers work with Sheet Metal Technicians in the development of complex geometrical parts. The Fabrication Engineer provides direct support to the manufacturing industry in the areas of design, fabrication, modification and development of metal assemblies, components and sub-assemblies.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

Manufacturing Engineer  
Sheet Metal Engineer

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 480816 Metal Trade Information & Metals
- 480813 Parallel Line Layout
- 480817 Sheet Metal 1-A
- 219902 Principles of Engineering (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**WOOD MANUFACTURING ENGINEERING  
CIP 03.0509.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Wood Manufacturing Engineers design and create interior cabinets and wood products for homes and businesses. Wood Manufacturing Engineers consult with clients and Cabinetmakers for cutting, shaping wood, preparing surfaces and forming a completed product.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 480740 Wood Product Manufacturing
- 480731 Cabinet Making Technology
- 480716 Lumber Grading and Drying
- 219904 Computer Integrated Manufacturing (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Wood Product Supervisor  
Wood Technologist  
Wood Product Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**AUTOMOTIVE ENGINEERING  
CIP 15.0803.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing self-propelled ground vehicles and their systems. Includes instruction in vehicular systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance, and report preparation.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER  
TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (6) **SIX CREDITS** from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 470507 Automotive Maintenance and Light Repair Section A and Lab
- 470509 Automotive Maintenance and Light Repair Section B and Lab
- 470511 Automotive Maintenance and Light Repair Section C and Lab
- 470513 Automotive Maintenance and Light Repair Section D and Lab
- 219903 Digital Electronics (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Automotive Engineer  
Service Manager

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**CONSTRUCTION ARCHITECTURAL ENGINEERING  
CIP 15.0101.02**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of architects, engineers and planners engaged in designing and developing buildings, urban complexes, and related systems. Includes instruction in design testing procedures, building site analysis, model building and computer graphics, structural systems testing, analysis of prototype mechanical and interior systems, report preparation, basic construction and structural design, architectural rendering, architectural-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) **FIVE CREDITS** from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 460201 Introduction to Construction Technology
- 460212 Floor and Wall Framing
- 460213 Ceiling and Roof Framing
- 219905 Civil Engineering & Architecture (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Flooring Engineer  
Construction Engineer  
Structural Engineer

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**STRUCTURAL ENGINEERING  
CIP 14.0803.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of architects, engineers and planners engaged in designing and developing buildings, urban complexes, and related systems. Includes instruction in design testing procedures, building site analysis, model building and computer graphics, structural systems testing, analysis of prototype mechanical and interior systems, report preparation, basic construction and structural design, architectural rendering, architectural-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

**BEST PRACTICE COURSES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) **FIVE CREDITS** from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 460201 Introduction to Construction Technology
- 460218 Construction Forms
- 460214 Site Layout and Foundations
- 219905 Civil Engineering & Architecture (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

Engineering Technology  
Instructor  
Architect  
Interior Designer  
Home Improvement  
Contractor  
Carpenter  
Construction Laborer  
Construction Manager  
Construction Supervisor  
Project Manager

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**CTE-PLTW HYBRID  
CAREER PATHWAYS  
2016-2017**

**ELECTRICAL CONSTRUCTION ENGINEERING  
CIP 15.0303.00**

**PATHWAY DESCRIPTION:** This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

**BEST PRACTICE COURSES**

**EXAMPLE  
ILP-RELATED  
CAREER TITLES**

*Foundational Skills Necessary for Career-Ready Measure:  
(KOSSA/Industry Certification)*

*Complete (5) FIVE CREDITS from the following :*

- 219901 Introduction to Engineering Design (*PLTW*)
- 460316 Circuits I
- 460319 Circuits II
- 219903 Digital Electronics (*PLTW*)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to [PLTW Program Requirements](#) for further information.

Electrical Engineer  
Electrical Engineering  
Tech  
Electrician

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