KENTUCKY CTE

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Kentucky Department of

EDUCATION

2026 – 2027

KENTUCKY PROGRAMS OF STUDY DIRECTORY

2026-2027 Program of Studies Revisions

The 2025-2026 course codes initially published on the Searchable State Course Codes Database (SSCCD) provided two separate AP Cyber courses: 110231 AP CK Cyber: Security and 110920 AP CK Cyber: Networking. Both courses were approved for use within the Cybersecurity Pathway (14.0902.00). It has been confirmed that the College Board ultimately developed only one course, AP Cybersecurity, for the 2026-2027 academic year.

The 2026-2027 Program of Studies version 1.2 reflects the following changes:

1. **110920** - AP CK Cyber: Networking has been removed.
2. **110231** - AP CK Cyber: Security is now 110231 - AP Cybersecurity and is available in the following pathways:
    - **11.0201.01** - Computer Programming
    - **14.0902.00** - Cybersecurity
    - **11.1003.00** - Network Security

OCTE Programs of Study Key Terms and Processes

In an ongoing effort to demonstrate continuous improvement and simplify processes, OCTE has streamlined the Program of Study (POS) documentation process for 2026-27. Please note the following important distinctions:

- **Program Area** – A **program area** is a broad category that encompasses various related fields of study. It represents a major sector of education and training within the Career and Technical Education (CTE) framework. KY program areas are similar to national career clusters in that they are a system of grouping related occupations and industries that share common skills and knowledge.
- **Career Pathway** – Pursuant to KRS 158.810 and 157.072, a **career pathway** is a **"**coherent, articulated sequence of rigorous academic and career-related courses, commencing in **ninth grade and leading to an associate degree, an industry-recognized certificate or license, or a baccalaureate or higher degree.** A career pathway is developed, implemented, and maintained in partnership among secondary and postsecondary education institutions, businesses, and employers."
- **Career Pathway Program of Study** – Pursuant to KRS 158.810 and 157.072, a **career pathway program of study** is a "coherent, articulated sequence of rigorous academic and career and technical education courses, including dual credit opportunities, that prepares **secondary students** for postsecondary study leading to postsecondary degrees, industry certifications, or licensure."
- **Program of Study (POS)** – Perkins V term used to describe a coordinated, nonduplicative sequence of academic and technical content at the **secondary and postsecondary level**. Per the *Comprehensive Guide to the Federal Role in Career and Technical Education* published by the Bruman Group, programs of study should "run parallel" to career pathways.
- **Perkins State Approved Model Programs of Study** – Initially used as exemplars to show preferred course sequences with seamless transitions from high school to postsecondary education and to assist with the overall transition to Perkins V. Pursuant to Perkins V, Section 124 (b)(1), the original Perkins State Approved Model Programs of Study are listed for reference in the 2026-27 OCTE Programs of Study Directory appendix.
- **2026-2027 Kentucky Programs of Study Directory** – Single comprehensive guide containing all current OCTE approved Programs of Study. Beginning in 2026-27, all districts will select state-approved options published in this guide as the basis for completing the Program of Study application to demonstrate that all Perkins-funded programs of study meet the state's definition of Size, Scope, and Quality.
- **Program of Study Application** – An application used to document the district meets the Perkins Size, Scope and Quality requirements for district CTE programs of study. The application documents district POS:
    - Is of sufficient size, offering a sequence of 4 or more earned technical credits
    - Has a postsecondary connection through dual enrollment, dual credit, current agreement for a program of study or current local articulation agreement approved by the lead administrators of KDE and postsecondary institutions or leads to KDE-approved industry-recognized certifications
    - Has an active advisory panel
    - Has a certified, appropriately endorsed teacher
    - Has a co-curricular career and technical student organization (CTSO) that provides students the opportunity to engage in leadership development activities (Note: Active CTSO affiliation must be established by 12/1 with at least 1 paid member per CTSO chapter.)
    - Is supported by current labor market data

    Program of Study Application Process:

    Step 1: Complete all fields of the Programs of Study Application. (Use the checklist to ensure all application components are complete.)
    Step 2: Submit the completed application to kdeocteposapplicationreview@education.ky.gov for approval. (Note: District name, school name, program area, and POS must be included in the email subject line and POS application document title.)
    Step 3: Add to GMAP the name of the POS approver and the date of email approval.
    Step 4: Upload the approved program of study application to the GMAP documents section.
- **TEDS Pathway Modification** – An application used to document rare, special circumstances in which a district cannot complete a Program of Study Application with options published in the Kentucky Programs of Study Directory. These applications are submitted via TEDS and are approved by OCTE Program Area Consultants, not Perkins Consultants. Once approved in TEDS by OCTE Program Area Consultants, the district must follow up with Steps 1-4 of the Program of Study Application process outlined above.

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Wood Manufacturing Programs of Study

Course specific documents are available at the Kentucky Department of Education program area page:
Advanced Manufacturing - Kentucky Department of Education

Computer-Aided Design (CAD) Programs of Study

Architectural Technology CIP 15.1301.03

Civil Designer CIP 15.1301.01

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Mechanical Designer CIP 15.1301.02

Architectural Technology CIP 15.1301.03

Architectural technology utilizes mathematical and scientific principles to draw building layouts, including structural, HVAC, lighting, plumbing and electrical systems, while addressing functionality, safety and economic issues. Architectural drafters must be able to draw designs manually and through computer-aided drafting (CAD). Additional concerns are site considerations and building codes.

BEST PRACTICE COURSES
Complete (3) three credits:

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

Complete (1) one credit:

- **480127** Industrial Drafting Processes
- **480113** Engineering Graphics
- **470924** Advanced Dimensioning and Measurement
- **480179** Special Problems (CAD)
- **480112** Intermediate Computer-Aided Drafting
- **480145** Internship (CAD
- **480142** Co-op* I (CAD)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Civil Designer CIP 15.1301.01

Civil Designers apply technical knowledge and skills to develop working drawings and electronic simulations in support of civil engineers, geological engineers, and related professionals. This pathway 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
Complete (3) three credits:

- **480110** Introduction to Computer-Aided Drafting
- **480112** Intermediate Computer-Aided Drafting
- **480104** Introduction to Surveying (For CAD) (.5-1 credit) **OR** **480113** Engineering Graphics

Complete (1) one credit:

- **480127** Industrial Drafting Processes
- **480136** Parametric Modeling
- **480145** Internship (CAD)
- **480135** Mechanical Design
- **480142** Co-op* I (CAD)
- **480179** Special Problems (CAD)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Mechanical Designer CIP 15.1301.02

Mechanical designers have a working knowledge of mechanical parts and computer-aided design (CAD) software, such as AutoCAD and SolidWorks. Mechanical designers work with project managers, engineers, and clients to understand the needs and requirements for a new product or mechanical system. Once materials and specifications have been determined, designers begin using CAD software to plan and develop models.

BEST PRACTICE COURSES
Complete (3) three credits:

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

Complete (1) one credit:

- **480135** Mechanical Design
- **480127** Industrial Drafting Processes
- **470924** Advanced Dimensioning and Measurement
- **480112** Intermediate Computer-Aided Drafting
- **480145** Internship (CAD)
- **480142** Co-op* I (CAD)
- **480179** Special Problems (CAD)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

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Computerized Manufacturing and Machining (CMM) Programs of Study

Computer Numerical Control (CNC) Operator CIP 48.0503.04

Machinist Operator CIP 48.0503.02

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Computer Numerical Control (CNC) Operator CIP 48.0503.04

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 select and set all tools required to produce the final precision part to customer specifications.

BEST PRACTICE COURSES
Complete (4) four credits:

- **470913** Fundamentals of Machine Tools-A
- **470914** Fundamentals of Machine Tools-B
- **470915** Manual Programming
- **470925** CAD/CAM/CNC
- **470921** Blueprint Reading for Machinists
- **480110** Introduction to Computer-Aided Drafting
- **470924** Advanced Dimensioning and Measurement
- **470927** Conversational Editing and Subroutines
- **480112** Intermediate Computer-Aided Drafting
- **470926** Introduction to Conversational Programming
- **470932** Internship (Machine Tool)
- **470929** Co-op* (Machine Tool)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Machinist Operator CIP 48.0503.02

Machine operators are responsible for producing precision machined parts. They measure parts with precision tools to ensure certain parts meet pre-determined quality and cosmetic standards. When parts have passed inspection, the parts go on to the next production phase. 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
Complete (2) two credits:

- **470913** Fundamentals of Machine Tools – A
- **470914** Fundamentals of Machine Tools – B

Complete (2) two credits:

- **470921** Blueprint Reading for Machinists
- **470911** Applied Machining I
- **470912** Applied Machining II
- **470915** Manual Programming
- **480110** Introduction to Computer-Aided Drafting
- **470922** Mechanical Blueprint Reading (.5 credit)
- **470928** Metrology/Control Charts (.5 credit)
- **470932** Internship (Machine Tool)
- **470929** Co-op* (Machine Tool)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

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Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Industrial Maintenance Technology Programs of Study

Electrical Technician CIP 47.0303.02

Maintenance Machinist CIP 47.0303.03

Maintenance Mechanic CIP 47.0303.01

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Welding Maintenance Technician CIP 47.0303.06

Electrical Technician CIP 47.0303.02

Electrical technicians apply electrical theory and related knowledge to diagnose and modify developmental or operational electrical machinery, electrical control equipment, and circuitry in industrial or commercial plants and laboratories. They assemble and test 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
Complete (3) three credits:

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

Complete (1) one credit:

- **499925** Basic Troubleshooting (.5 credit)
- **470301** Shop Management (.5 credit)
- **499920** Basic Blueprint Reading (.5 credit)
- **470321** Fluid Power
- **470328** Welding for Maintenance
- **470318** Maintaining Industrial Equipment
- **470351** Robotics and Automation (For Maintenance)
- **470308** Internship (Ind Maint)
- **470305** Co-op* I (Ind Maint)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Maintenance Machinist CIP 47.0303.03

Maintenance machinists set up and operate various machine tools and fit and assemble parts to fabricate or repair machine tools and maintain industrial machines, applying knowledge of mechanics, shop mathematics, metal properties, layout, and machining procedures. They observe, listen to and diagnose operating machinery or equipment to correct machine malfunction and determine the need for adjustment or repair.

BEST PRACTICE COURSES
Complete (3) three credits:

- **470921** Blueprint Reading for Machinists
- **470313** Fundamentals of Machine Tools – A (For Maintenance) (.5 - 1 credit)
- **470314** Fundamentals of Machine Tools – B (For Maintenance) (.5 - 1 credit)

Complete (1) one credit:

- **470360** Applied Machining I (for Industrial Maint.)
- **470301** Shop Management (.5 credit)
- **499925** Basic Troubleshooting (.5 credit)
- **499920** Basic Blueprint Reading (.5 credit)
- **470318** Maintaining Industrial Equipment
- **470328** Welding for Maintenance
- **470322** Industrial Maintenance Electrical Principles
- **470308** Internship (Ind Maint)
- **470305** Co-op* I (Ind Maint)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Maintenance Mechanic CIP 47.0303.01

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. They read and interpret equipment manuals and work orders to perform required maintenance and service and analyze and inspect equipment, structures, or materials to identify errors, problems or defects.

BEST PRACTICE COURSES
Complete (2) two credits:

- **470322** Industrial Maintenance Electrical Principles
- **470318** Maintaining Industrial Equipment

Complete (2) two credits:

- **470321** Fluid Power
- **470348** Industrial Maintenance Electrical Motor Controls
- **470330** Industrial Maintenance of PLCs (Programmable Logic Controllers)
- **499925** Basic Troubleshooting (.5 credit)
- **470301** Shop Management (.5 credit)
- **499920** Basic Blueprint Reading (.5 credit)
- **470351** Robotics and Automation (For Maintenance)
- **470328** Welding for Maintenance
- **470313** Fundamentals of Machine Tools – A (For Maintenance) (.5 – 1 credit)
- **470316** Advanced Hydraulic Systems
- **470326** Advanced Pneumatic Systems
- **470360** Applied Machining I (for Industrial Maint.)
- **470361** Cooling and Dehumidification (for Industrial Maint.)
- **470358** Electrical Components (Ind. Maint.)
- **470314** Fundamentals of Machine Tools – B (For Maintenance)
- **470363** Heating and Humidification (for Industrial Maint.)
- **470365** HVAC Electricity (for Industrial Maint.)
- **470349** Refrigeration Fundamentals (For Maintenance)
- **470308** Internship (Ind Maint)
- **470305** Co-op* I (Ind Maint)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Welding Maintenance Technician CIP 47.0303.06

Welding Maintenance Technicians layout, fabricate, set up and weld metals in all positions. Welding Technicians must operate all types of welding equipment, 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 the need for adjustment or repair.

BEST PRACTICE COURSES
Complete (3) three credits:

- **470328** Welding for Maintenance
- **470354** Shielded Metal Arc Welding (For Maintenance)
- **470367** Gas Metal Arc Welding and Lab (Ind. Maint.)

Complete (1) one credit:

- **499925** Basic Troubleshooting (.5 credit)
- **470322** Industrial Maintenance Electrical Principles
- **470318** Maintaining Industrial Equipment
- **470313** Fundamentals of Machine Tools – A (For Maintenance)
- **499920** Basic Blueprint Reading (.5 credit)
- **470301** Shop Management (.5 credit)
- **470308** Internship (Ind Maint)
- **470305** Co-op* I (Ind Maint)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Manufacturing Hybrid Programs of Study

Additive Manufacturing CIP 15.1307.00

Computerized Manufacturing and Machining (CMM) Engineering CIP 48.0510.00

Design Engineering CIP 15.1304.00

Fabrication Engineering CIP 14.1901.00

Industrial Maintenance Engineering CIP 14.4101.00

Welding Engineering CIP 15.0614.00

Wood Manufacturing Engineering CIP 03.0509.00

Additive Manufacturing CIP 15.1307.00

A program that prepares individuals to apply technical knowledge and skills in using three-dimensional (3D) computer technology to create technical illustrations and models used in manufacturing, design, production, and construction. Includes instruction in 3D computer-aided design (CAD), 3D printing, 3D model design and construction, and 3D scanning.

BEST PRACTICE COURSES
Complete (3) three credits:

- **332001** Introduction to 3D Printing Technology
- **332002** Engineering Mechanics for 3D Printing
- **332003** Additive Manufacturing Applications

Complete (1) one credit:

- **210110** Engineering Capstone
- **480179** Special Problems (CAD)
- **110226** Project-Based Programming
- **210331** Engineering Internship
- **210330** Engineering Co-op
- **480145** Internship (CAD)
- **480142** Co-op* I (CAD)
- **110918** Computer Science Co-op
- **110919** Computer Science Internship

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Computerized Manufacturing and Machining (CMM) Engineering CIP 48.0510.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 that direct machines to cut and shape metal or plastic for airplanes, automobiles and other industrial machines. CMM Engineers use blueprints and three-dimensional computer designs to create programs that produce precisely cut products.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210118** Mechanical Engineering
- **210135** Industrial Engineering
- **210225** Manufacturing Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **470913** Fundamentals of Machine Tools-A
- **470914** Fundamentals of Machine Tools-B
- **470915** Manual Programming

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Design Engineering CIP 15.1304.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 and computer-aided design (CAD) software such as AutoCAD, Autodesk Inventor, or Solidworks. Mechanical designers begin a project by meeting with the project manager, 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 use CAD (computer-aided design) software to plan and develop models.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II
- **210138** Technical Design I
- **210108** Technical Design II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480110** Introduction to Computer-Aided Drafting
- **480113** Engineering Graphics
- **480135** Mechanical Design
- **480136** Parametric Modeling

Fabrication Engineering CIP 14.1901.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. Fabrication Engineers design parts to engineering specifications to develop metal parts and interior metal structures. Fabrication Engineers work with Sheet Metal Technicians to develop complex geometrical parts. The Fabrication Engineer directly supports the manufacturing industry in designing, fabricating, modifying and developing metal assemblies, components and sub-assemblies.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480816** Metal Trade Information and Metals
- **480813** Parallel Line Layout
- **480817** Sheet Metal 1-A
- **480818** Sheet Metal 1-B

Industrial Maintenance Engineering CIP 14.4101.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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, 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
Complete (2) two credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **210230** Mechatronics Engineering
- **210225** Manufacturing Engineering
- **210135** Industrial Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **470348** Industrial Maintenance Electrical Motor Controls
- **470322** Industrial Maintenance Electrical Principles
- **470330** Industrial Maintenance of PLCs

Welding Engineering CIP 15.0614.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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, shipbuilding, aircraft and mobile home industries. Welding Engineers must know about cutting processes and gas metal arc welding procedures to develop these industrial processes efficiently.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II
- **210138** Technical Design I
- **210108** Technical Design II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480505** Blueprint Reading for Welding
- **480501** Cutting Processes and Lab
- **480522** Gas Metal Arc Welding and Lab
- **480521** Shielded Metal Arc Welding (SMAW) and Lab

Wood Manufacturing Engineering CIP 03.0509.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 to cut, shape wood, prepare surfaces, and form a completed product.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210225** Manufacturing Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480731** Cabinet Making Technology
- **480725** CAD for Wood Technology
- **480721** Furniture Technology
- **480716** Lumber Grading and Drying
- **480740** Wood Product Manufacturing
- **480733** Advanced Wood Processing

Metal Fabrication Programs of Study

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Metal Fabrication TRACK Pre-Apprenticeship CIP 48.0506.99

Sheet Metal Technician CIP 48.0506.01

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Metal Fabrication TRACK Pre-Apprenticeship CIP 48.0506.99

The Metal Fabrication TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence and pass the end-of-program assessment (students can be enrolled in the 4th course to take the assessment) to receive the industry certification. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Division of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

BEST PRACTICE COURSES
Complete (4) four required credits

- **480817** Sheet Metal I-A MTF240
- **480818** Sheet Metal I-B MTF242
- **480819** Sheet Metal II-A MTF270
- **480820** Sheet Metal II-B MTF272

Sheet Metal Technician CIP 48.0506.01

Sheet metal technicians create 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 to develop geometrical parts. The Sheet Metal Technician directly supports manufacturing to design, fabricate, modify, and evaluate parts, assemblies, components and sub-assemblies according to specifications.

BEST PRACTICE COURSES
Complete (4) four credits:

- **480816** Metal Trade Information and Metals
- **480813** Parallel Line Layout
- **480817** Sheet Metal I-A
- **480818** Sheet Metal I-B
- **480806** Internship (Metal Fab)
- **480803** Co-op* I (Metal Fab)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Welding Technology Programs of Study

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Welding TRACK Pre-Apprenticeship CIP 48.0508.99

Welder-Entry Level CIP 48.0508.01

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

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The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Welding TRACK Pre-Apprenticeship CIP 48.0508.99

The Welding TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence (students can be enrolled in the 4th course to take the assessment) and pass the TRACK end-of-program assessment. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Office of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

Please visit the Welding TRACK website for more information or a list of participating organizations,

BEST PRACTICE COURSES
Complete (4) four credits:

- **480501** Cutting Processes and Lab
- **480522** Gas Metal Arc Welding and Lab
- **480521** Shielded Metal Arc Welding (SMAW) and Lab
- **480528** SMAW Groove Welds with Backing Lab

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Welder-Entry Level CIP 48.0508.01

An entry-level welder demonstrates the ability to assist lead welders in fabricating steel and metal structures. Students must perform essential welding functions, calculate dimensions, and operate power equipment, grinders, and other tools. Students must be proficient in reading and interpreting basic blueprints and following Welding Procedure Specification (WPS).

BEST PRACTICE COURSES
Complete (4) four credits:

- **480505** Blueprint Reading for Welding (.5 – 1 credit)
- **480524** Basic Welding (.5 – 1 credit)
- **480523** Oxy-fuel Systems (.5 – 1 credit) **OR** **480501** Cutting Processes and Lab (.5 – 1 credit)
- **480521** Shielded Metal Arc Welding (SMAW) and Lab
- **480522** Gas Metal Arc Welding and Lab (.5 – 1 credit)
- **480533** GMAW Groove Lab
- **480528** SMAW Groove Welds with Backing Lab
- **480535** SMAW Open Groove Lab
- **480525** Gas Tungsten Arc Welding and Lab (.5 – 1 credit)
- **480538** Gas Tungsten Pipe Welding Pipe Lab A
- **480530** GTAW Groove Lab
- **480540** GMAW Pipe Lab A
- **480534** GMAW Aluminum Lab (.5 credit)
- **480536** Shielded Metal Arc Welding Pipe Lab A
- **480544** Internship (Welding)
- **480541** Co-op* I (Welding)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Wood Manufacturing Programs of Study

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

Wood Manufacturing CIP 48.0703.02

Manufacturing TRACK Youth Apprenticeship CIP 48.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Wood Manufacturing CIP 48.0703.02

Cabinet makers are specific types of woodworkers who create and install cabinets in bathrooms, kitchens, and other areas of homes or 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
Complete (4) four credits:

- **480719** Technical Drawing and Blueprint Reading (.5 credit)
- **480720** Wood Finishing (.5 credit)
- **480740** Wood Product Manufacturing
- **480731** Cabinet Making Technology
- **480733** Advanced Wood Processing
- **480725** CAD for Wood Technology (.5 credit)
- **480721** Furniture Technology
- **480110** Introduction to Computer-Aided Drafting
- **480716** Lumber Grading and Drying
- **480711** Introduction to Panel Processing
- **480717** Millwork Technology
- **480744** Internship (Wood)
- **480741** Co-op* I (Wood)
- **332001** Introduction to 3D Printing Technology
- **210221** Engineering I

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Agricultural Education

Programs of Study

Agribusiness Systems CIP 01.0101.00

Agricultural Power, Structural, Technical Systems CIP 01.0201.00

Agriculture TRACK Youth Apprenticeship CIP 01.0101.99

Animal Science Systems CIP 01.0901.00

Environmental Science and Natural Resources Systems CIP 03.0101.00

Food Science and Processing Systems CIP 01.1001.00

Plant Science Systems CIP 01.1101.00

Course specific documents are available at the Kentucky Department of Education program area page:
Agricultural Education - Kentucky Department of Education

Agribusiness Systems CIP 01.0101.00

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
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) two – three credits:

- **010131** Agribusiness and Farm Management
- **010121** Agriculture Employability Skills
- **010111** Agriculture Sales and Marketing
- **010110** Agriculture Communications
- **010101** Advanced Agricultural Economics and Agribusiness Management

May substitute (1) one credit below for a pathway course:

- **010641** Greenhouse Technology
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Agricultural Power, Structural, Technical Systems CIP 01.0201.00

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

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) two – three credits:

- **030718** Emerging Agricultural Technology
- **010241** Agriculture Construction Skills
- **010231** Small Power and Equipment
- **010212** Agriculture Power and Machinery Operation
- **010211** Agriculture Structures and Designs

May substitute (1) one credit below for a pathway course:

- **010121** Agriculture Employability Skills
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Agriculture TRACK Youth Apprenticeship CIP 01.0101.99

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The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Animal Science Systems CIP 01.0901.00

This pathway focuses on the scientific principles underlying 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
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) two – three credits:

- **020501** Animal Science
- **020502** Animal Technology
- **020510** Equine Science
- **020503** Small Animal Technology
- **020511** Veterinary Science

May substitute (1) one credit below for a pathway course:

- **010702** Food Science and Technology
- **010701** Food Processing, Distribution and Marketing
- **020520** Aquaculture
- **030713** Agri-biology Interdisciplinary
- **010121** Agriculture Employability Skills
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Environmental Science and Natural Resources Systems CIP 03.0101.00

This pathway focuses on the studies and activities relating to the natural environment and its conservation, use, and improvement. The basic principles of environmental science and natural resource management are the foundational concepts of this pathway. Subjects addressed include air, soil, water, wildlife, plants, and energy sources. Instruction related to using these resources economically and recreationally is also included.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) two – three credits:

- **030610** Forestry
- **030609** Environmental Science and Technology
- **030611** Wildlife Resources
- **020520** Aquaculture
- **010611** Introduction to Greenhouse and Crop Production
- **030713** Agri-biology Interdisciplinary

May substitute (1) one credit below for a pathway course:

- **010121** Agriculture Employability Skills
- **010641** Greenhouse Technology
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Food Science and Processing Systems CIP 01.1001.00

This pathway focuses on applying biological, chemical, and physical principles to the study of converting raw agricultural products into processed forms suitable for direct human consumption and storing such products. Human health and safety related to food processing and consumption are continually addressed in this pathway.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) credits:

- **030713** Agri-biology Interdisciplinary
- **010702** Food Science and Technology
- **010701** Food Processing, Distribution and Marketing
- **020210** Agribiotechnology

May substitute (1) one credit below for a pathway course:

- **020501** Animal Science
- **010111** Agriculture Sales and Marketing
- **010121** Agriculture Employability Skills
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Plant Science Systems CIP 01.1101.00

This pathway 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
Complete (1-2) one – two credits:

- **030715** Principles of Agricultural Science and Technology
- **030711** Agriscience (CTE Credit) **OR** **030712** Agriscience (Science Credit)

Complete (2-3) two – three credits:

- **010611** Introduction to Greenhouse and Crop Production
- **010621** Floriculture and Floral Design
- **010641** Greenhouse Technology
- **010651** Nursery and Orchard Technology
- **010631** Landscape and Turf Management
- **010610** Crop Technology

May substitute (1) one credit below for a pathway course:

- **010131** Agribusiness and Farm Management
- **010121** Agriculture Employability Skills
- **010111** Agriculture Sales and Marketing
- **030713** Agri-biology Interdisciplinary
- **030791** Agricultural Education Internship
- **030790** Agricultural Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Business and Marketing

Programs of Study

Accounting CIP 52.0301.00

Administrative Support CIP 52.0401.00

Business Education TRACK Youth Apprenticeship CIP 52.0101.99

E-Commerce CIP 52.0208.02

Financial Services CIP 52.1908.00

Hospitality, Travel, Tourism and Recreation CIP 52.1910.00

Marketing CIP 52.1401.01

Management and Entrepreneurship CIP 52.0701.00

Marketing Education TRACK Youth Apprenticeship CIP 52.1400.99

Retail Services CIP 52.1803.00

Supply Chain Management CIP 52.0203.00

Course specific documents are available at the Kentucky Department of Education program area page:
Business and Marketing Education - Kentucky Department of Education

Accounting CIP 52.0301.00

This pathway generally 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
Complete (2-3) two - three credits:

- **060122** Accounting and Finance Foundations
- **070122** Financial Management
- **070125** Advanced Accounting (Special Teacher Training Required) **OR** **060399** Financial Analysis for Managers

Complete (1-2) one - two credits:

- **080719** Financial Literacy
- **060411** Introduction to Management
- **070750** Microsoft Office Specialist
- **060111** Business and Marketing Essentials
- **070743** Office Administration
- **060108** Business Education Internship
- **060107** Business Education Co-op*
- **060112** Digital Literacy **OR** **110110** Computer Literacy
- **060109** Ethical Leadership

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Administrative Support CIP 52.0401.00

This pathway is designed to provide students with advanced experience to propel them into the 21st-century business world as they serve as college interns, administrative assistants, graduate assistants, and office managers. Instruction includes fundamental business procedures, human resource management, time management software, workstation management, travel planning, financial reporting, payroll, mail procedures, effective communication, and ethical decision-making skills.

BEST PRACTICE COURSES
Complete (3-4) three – four credits:

- **060112** Digital Literacy **OR 110110** Computer Literacy
- **060122** Accounting and Finance Foundations
- **070743** Office Administration
- **060111** Business and Marketing Essentials

Complete (0-1) zero – one credit:

- **070971** Medical Office Procedures
- **070750** Microsoft Office Specialist
- **070881** Legal Office **OR 060121** Business Law
- **060155** Business Communications
- **170131** Medical Terminology (.5 – 1 credit)
- **170141** Emergency Procedures (.5 credit)
- **060108** Business Education Internship
- **060107** Business Education Co-op*
- **060109** Ethical Leadership
- **060411** Introduction to Management
- **060751** Multimedia Publishing

May substitute ONE credit below for the Accounting and Finance Foundations course:

- **080719** Financial Literacy
- **070125** Advanced Accounting (Special Teacher Training Required)
- **070122** Financial Management
- **080772** Business Math (CTE Credit)
- **080780** Business Math (Math Credit)

Business Education TRACK Youth Apprenticeship CIP 52.0101.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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E-Commerce CIP 52.0208.02

This pathway 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 business management principles, and applicable technical and equipment skills.

BEST PRACTICE COURSES
Complete (2-3) two - three credits:

- **060112** Digital Literacy **OR** **110110** Computer Literacy
- **080716** Marketing Principles
- **081511** Advertising and Promotion
- **060751** Multimedia Publishing
- **060199** Web Page Design **OR** **081310** Digital Marketing

Complete (1-2) one - two credits:

- **080310** Principles of Entrepreneurship
- **060111** Business and Marketing Essentials
- **080717** Marketing Applications
- **060761** Advanced Multimedia Publishing
- **081512** Promotional Applications and Media
- **081431** Retail Marketing Management
- **080708** Marketing Education Internship
- **080707** Marketing Education Co-op*
- **070750** Microsoft Office Specialist
- **060109** Ethical Leadership
- **080719** Financial Literacy

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Financial Services CIP 52.1908.00

This pathway prepares individuals to perform various 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
Complete (2-3) two - three credits:

- **060311** Financial Services I
- **060122** Accounting and Finance Foundations
- **060301** Introduction to Finance

Complete (1-2) one - two credits:

- **060351** Financial Services II
- **060111** Business and Marketing Essentials
- **080719** Financial Literacy
- **060108** Business Education Internship
- **060107** Business Education Co-op*
- **080716** Marketing Principles
- **060399** Financial Analysis for Managers
- **070122** Financial Management
- **060109** Ethical Leadership
- **080720** Invest – Insurance Education for Future Leaders

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Hospitality, Travel, Tourism and Recreation CIP 52.1910.00

The Hospitality, Travel, Tourism and Recreation career pathway prepares individuals to provide services in the hospitality and leisure fields. Includes instruction in hospitality operations, customer sales, marketing techniques, assistance operations and techniques, essential office management, sports, recreation and equipment management, and food and beverage services. The Hospitality, Travel, Tourism and Recreation career pathway is a hybrid pathway that consists of courses within Family and Consumer Sciences Education and Marketing Education. It blends two program areas to help students explore technical skills in the industry.

BEST PRACTICE COURSES
Complete (3) three credits:

- **080910** Principles of Hospitality **OR** **200610** Principles of Hospitality
- **080716** Marketing Principles
- **200641** Specialized Services in Hospitality
- **080717** Marketing Applications
- **080911** Travel and Tourism Marketing
- **200442** Advanced Foods and Nutrition

Complete (1) one credit:

- **080310** Principles of Entrepreneurship
- **200441** Foods and Nutrition **OR** **200113** FCS Essentials
- **200601** Internship: Hospitality, Travel, Tourism and Recreation
- **200690** Co-op*: Hospitality, Travel, Tourism and Recreation
- **080708** Marketing Education Internship
- **080707** Marketing Education Co-op*
- **081121** Sports and Event Marketing
- **060109** Ethical Leadership

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Management and Entrepreneurship CIP 52.0701.00

This pathway 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
Complete (2-3) two - three credits:

- **060111** Business and Marketing Essentials
- **060411** Introduction to Management
- **080310** Principles of Entrepreneurship

Complete (1-2) one - two credits:

- **060112** Digital Literacy **OR** **110110** Computer Literacy
- **080317** Business Economics (CTE Credit) **OR** **060596** Business Economics (Economics Credit)
- **060122** Accounting and Finance Foundations
- **060108** Business Education Internship
- **060107** Business Education Co-op*
- **080716** Marketing Principles
- **070750** Microsoft Office Specialist
- **060109** Ethical Leadership
- **060155** Business Communications

May substitute (1) one credit below for the Accounting and Finance Foundations course:

- **070125** Advanced Accounting (Special Teacher Training Required)
- **080719** Financial Literacy
- **070122** Financial Management
- **060399** Financial Analysis for Managers
- **080772** Business Math (CTE Credit)
- **080780** Business Math (Math Credit)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Marketing CIP 52.1401.01

This pathway generally prepares individuals to undertake and manage developing consumer audiences and moving products from producers to consumers. Includes instruction in buyer behavior and dynamics, principles 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
Complete (2) two credits:

- **080716** Marketing Principles
- **080717** Marketing Applications

Complete (2) two credits:

- **081511** Advertising and Promotion
- **081121** Sports and Event Marketing
- **080111** Fashion Marketing
- **081431** Retail Marketing Management
- **080310** Principles of Entrepreneurship
- **081512** Promotional Applications and Media
- **080911** Travel and Tourism Marketing
- **060122** Accounting and Finance Foundations
- **080719** Financial Literacy
- **060111** Business and Marketing Essentials
- **080708** Marketing Education Internship
- **080707** Marketing Education Co-op*
- **060109** Ethical Leadership
- **081310** Digital Marketing

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Marketing Education TRACK Youth Apprenticeship CIP 52.1400.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Retail Services CIP 52.1803.00

This pathway generally 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 services, team/staff leadership and supervision, floor management, and applicable technical skills.

BEST PRACTICE COURSES
Complete (2–3) two – three credits:

- **080716** Marketing Principles
- **081431** Retail Marketing Management
- **080717** Marketing Applications

Complete (1–2) one – two credits:

- **080310** Principles of Entrepreneurship
- **081512** Promotional Applications and Media
- **081511** Advertising and Promotion
- **081310** Digital Marketing
- **080111** Fashion Marketing
- **060122** Accounting and Finance Foundations **OR** **080719** Financial Literacy
- **080708** Marketing Education Internship
- **080707** Marketing Education Co-op*
- **060109** Ethical Leadership
- **060111** Business and Marketing Essentials

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Supply Chain Management CIP 52.0203.00

This pathway prepares individuals to manage and coordinate all supply chains in an enterprise, ranging from acquisitions to receiving and handling, through internal allocation of resources to operations units to the handling and delivery of output. Includes instruction in acquisitions and purchasing, inventory control, storage and handling, just-in-time manufacturing, logistics planning, shipping and delivery management, transportation, quality control, resource estimation and allocation, and budgeting.

BEST PRACTICE COURSES
Complete (4) four credits:

- **060111** Business and Marketing Essentials
- **060411** Introduction to Management
- **060123** Principles of Supply Chain Management
- **060124** Supply Chain Management Applications
- **060108** Business Education Internship
- **060107** Business Education Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Computer Science

Programs of Study

Additive Manufacturing CIP 15.1307.00

Computer Programming CIP 11.0201.01

Computer Science TRACK Youth Apprenticeship CIP 11.0101.99

Cybersecurity CIP 14.0902.00

Data Science CIP 11.0802.00

Digital Design and Game Development CIP 36.0113.00

Information Support and Services CIP 47.0104.01

Network Administration CIP 11.0901.01

Network Security CIP 11.1003.00

Web Development/Administration CIP 11.0801.01

Course specific documents are available at the Kentucky Department of Education program area page:
Computer Science - Kentucky Department of Education

Additive Manufacturing CIP 15.1307.00

A program that prepares individuals to apply technical knowledge and skills in using three-dimensional (3D) computer technology to create technical illustrations and models used in manufacturing, design, production, and construction. Includes instruction in 3D computer-aided design (CAD), 3D printing, 3D model design and construction, and 3D scanning.

BEST PRACTICE COURSES
Complete (3) three credits:

- **332001** Introduction to 3D Printing Technology
- **332002** Engineering Mechanics for 3D Printing
- **332003** Additive Manufacturing Applications

Complete (1) one credit:

- **210110** Engineering Capstone
- **480179** Special Problems (CAD)
- **110226** Project-Based Programming
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **480145** Internship (CAD)
- **480142** Co-op* I (CAD)
- **110918** Computer Science Co-op*
- **110919** Computer Science Internship

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Computer Programming CIP 11.0201.01

The Computer Programming pathway courses will prepare students to design and create apps and troubleshoot the latest programming languages used in the industry. The coursework will include instruction in the principles of Computational Science, App Development, Computer Programming and Web Page Development. Upon Completion of this career pathway, students will be prepared for an entry-level position or continue their education in Computer Programming.

BEST PRACTICE COURSES
Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110251** Computational Thinking
- **110201** Introduction to Programming
- **110220** Object-Oriented Programming I
- **110221** Object-Oriented Programming II
- **110230** Cybersecurity **OR** **110231** AP Cybersecurity
- **110226** Project-Based Programming
- **110701** AP Computer Science A
- **110711** AP Computer Science Principles
- **110801** Web Page Development
- **110809** JavaScript
- **110821** App Development with Swift
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Computer Science TRACK Youth Apprenticeship CIP 11.0101.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Cybersecurity CIP 14.0902.00

The Cybersecurity pathway is a blend of programming, cybersecurity, and hardware engineering disciplines. Students will learn to research, design, develop, and test computer systems and components. The coursework explores robotics, electricity, ethical computing, and security concerns in today's digital society.

BEST PRACTICE COURSES
Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) three credits:

- **110222** Cyber Literacy I
- **110223** Cyber Literacy II
- **110224** Cyber Science
- **110230** Cybersecurity **OR** **110231** AP Cybersecurity
- **110225** Computer Science Fundamentals
- **110912** Security Fundamentals
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) "Beyond the Pathway" cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Data Science CIP 11.0802.00

Students will apply software systems and industry software to acquire, collect, store and communicate data meaningfully 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 solve real-world challenging problems effectively. Through project-based learning, students will explore the future of data science and learn those habits of behavior and mind unique to professionals in the field. Data Science 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.

BEST PRACTICE COURSES
Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) three credits:

- **110251** Computational Thinking
- **110220** Object-Oriented Programming I
- **111001** Computer, Networks, and Databases
- **210241** Introduction to Geographic Information Systems (GIS)
- **111003** Databases in the Cloud
- **111004** Data Visualization
- **110211** Introduction to Database Design
- **110204** Data Science Principles
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Digital Design and Game Development CIP 36.0113.00

The Digital Design and Game Development pathway courses provide students with a thorough understanding of techniques for designing advances in games, apps, AR/VR and other experiences. The courses will cover 2D and 3D graphics, animation, character development, program design and coding, texturing, scripting, and game setup using state-of-the-art software development tools. Completing students will have developed the skills necessary to create 3D graphics and applications that can be used for games and simulations.

BEST PRACTICE COURSES

Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110201** Introduction to Programming
- **110251** Computational Thinking
- **113605** Game Design and Development Principles
- **110226** Project-Based Programming
- **113601** Introduction to Digital Game Graphics
- **113602** Advanced Game Development and Publishing
- **113603** Advanced 3D Game Development
- **113604** Digital 3D Graphics and Special Effects II
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Information Support and Services CIP 47.0104.01

The Information Support and Services pathway focuses on the design of computing systems. The courses include instruction in the principles of computer hardware and software components, algorithms, databases, and telecommunications.

BEST PRACTICE COURSES

Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110101** Computer Hardware and Software Maintenances
- **110102** Help Desk Operations
- **110302** Management of Support Services
- **110917** Internet Technologies
- **110906** Network Hardware Installation and Troubleshooting
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) "Beyond the Pathway" cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Network Administration CIP 11.0901.01

The Network Administration pathway courses will help students learn new administration support skills or upgrade existing computer information systems skills. Students will be able to install networking software on an appropriately sized computer properly, configure the software for a simple server environment and connect it correctly to a physical network, manage a simple networking environment, effectively troubleshoot problems, add new users and attend to security concerns; and work within the ethical/professional parameters in the field of network administration.

BEST PRACTICE COURSES

Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110101** Computer Hardware and Software Maintenance
- **110251** Computational Thinking
- **110901** Introduction to Networking Concepts (non-vendor)
- **110917** Internet Technologies
- **110902** Network Fundamentals/Cisco I
- **110903** Routing Protocols and Concepts/Cisco II
- **110904** LAN Switching and Wireless/Scaling Networks/Cisco III
- **110913** Microsoft Client/Server Configuration
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Network Security CIP 11.1003.00

The Network Security pathway 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 wired LAN and work within the ethical and professional parameters in the Computer Networking profession. Students will be team members, learn new network administration support skills and upgrade existing computer information system skills.

BEST PRACTICE COURSES

Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110101** Computer Hardware or Software Maintenance
- **110901** Introduction to Networking Concepts (non-vendor)
- **110912** Security Fundamentals
- **110230** Cybersecurity **OR** **110231** AP Cybersecurity
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Web Development/Administration CIP 11.0801.01

The Web Development/Administration pathway involves creating, designing, and producing interactive multimedia products and services. This will include developing digitally generated or computer-enhanced media and adhering to web standards 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, track transactions, and collaborate with colleagues. This pathway will prepare students to enter the workforce ready to participate as leaders in various careers and further their education.

BEST PRACTICE COURSES
Complete (1) one credit:

- **110110** Computer Literacy
- **110710** Introduction to Computer Science

Complete (3) credits:

- **110251** Computational Thinking
- **110801** Web Page Development
- **110809** JavaScript
- **110804** Web Site Design and Production
- **110213** Design for the Internet
- **110917** Internet Technologies
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **110752** Special Topics – Computer Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Construction Technology

Air Conditioning Technology Programs of Study

Building Construction Technology Programs of Study

Construction Carpentry Technology Programs of Study

Electrical Technology Programs of Study

Heavy Equipment Sciences Programs of Study

Masonry Technology Programs of Study

Plumbing Technology Programs of Study

Course specific documents are available at the Kentucky Department of Education program area page:
Construction Technology - Kentucky Department of Education

Air Conditioning Technology Programs of Study

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Environmental Control System Technician CIP 47.0201.05

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Environmental Control System Technician CIP 47.0201.05

This pathway prepares individuals to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems. The pathway includes instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics related to the repair of heating, air conditioning and refrigeration systems.

BEST PRACTICE COURSES
Complete (4) four credits:

- **460828** Refrigeration Fundamentals
- **460817** HVAC Electricity
- **460826** Electrical Components
- **460820** Heating and Humidification
- **460880** Air Conditioning Co-op*

Completing the above four (4) courses will allow the student to take the “Kentucky Journeyman HVAC Mechanic” exam. After successfully completing the exam, the student will attain 750 of the 3000 hours of “On the Job Training” (OJT) required by regulation 815 KAR 8:030 Section 3.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Building Construction Technology Programs of Study

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Residential Maintenance Carpenter Assistant CIP 46.0401.01

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Residential Maintenance Carpenter Assistant CIP 46.0401.01

This pathway 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 essential 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
Complete two (2) credits:

- **460241** Introduction to Building and Construction Technology
- **460220** Residential Maintenance Carpentry

Complete two (2) credits:

- **460818** Residential HVAC Maintenance
- **460222** Residential Interior Maintenance
- **460114** Residential Maintenance Masonry
- **460333** Residential Maintenance Wiring
- **460516** Residential Maintenance Plumbing
- **460232** Internship (Building Construction Technology)
- **460229** Co-op (Building Construction Technology)*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Construction Carpentry Technology Programs of Study

Commercial Carpentry TRACK Pre-Apprenticeship CIP 46.0201.99

Construction Architectural Engineering CIP 15.0101.02

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Residential Carpenter Assistant CIP 46.0201.02

Structural Engineering CIP 14.0803.00

Commercial Carpentry TRACK Pre-Apprenticeship CIP 46.0201.99

The Commercial Carpentry TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence and pass the end-of-program assessment (students can be enrolled in the 4th course to take the assessment) to receive the industry certification. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Division of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

Please visit the Carpentry TRACK website for more information or a list of participating organizations.

BEST PRACTICE COURSES
Complete (4) four credits

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

Construction Architectural Engineering CIP 15.0101.02

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply engineering principles and technical skills to support architects, engineers and planners 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, computer-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210223** Civil Engineering
- **210140** Architectural Design
- **210141** Building Construction Technologies

Complete (2) two credits:

- **460201** Introduction to Construction Technology
- **460213** Ceiling and Roof Framing
- **460212** Floor and Wall Framing

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Residential Carpenter Assistant CIP 46.0201.02

This pathway prepares individuals to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures using hand and power tools. The pathway 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
Complete (4) four credits:

- **460201** Introduction to Construction Technology
- **460212** Floor and Wall Framing
- **460213** Ceiling and Roof Framing
- **460219** Exterior and Interior Finish (1 credit) **OR** **460217** Construction Prints (.5 credit) **AND** **499930** Industrial Safety (.5 credit)
- **460242** Co-op* (Carpentry)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Structural Engineering CIP 14.0803.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply engineering principles and technical skills to support architects, engineers and planners in designing and developing buildings, urban complexes, and related systems. It 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
Complete (2) two credits:

- **210221** Engineering I
- **210223** Civil Engineering
- **210141** Building Construction Technologies

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **460201** Introduction to Construction Technology
- **460218** Construction Forms
- **460214** Site Layout and Foundations

Electrical Technology Programs of Study

Construction Electrical TRACK Pre-Apprenticeship CIP 46.0302.99

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Electrical Construction Engineering CIP 15.0303.00

Industrial Electrician Assistant CIP 46.0302.02

Construction Electrical TRACK Pre-Apprenticeship CIP 46.0302.99

The Electrical TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence and pass the end-of-program assessment (students can be enrolled in the 4th course to take the assessment) to receive the industry certification. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Division of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

Please visit the Electrical TRACK website for more information or a list of participating organizations.

BEST PRACTICE COURSES
Complete (4) four credits:

- **460312** Electrical Construction I
- **460313** Electrical Construction II
- **460316** Circuits I
- **460319** Circuits II **OR** **460331** Electrical Motor Controls

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Electrical Construction Engineering CIP 15.0303.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway 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, DC and AC motors, controls, and electrical distribution panels. It 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
Complete (4) four credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **460316** Circuits I
- **460319** Circuits II

Industrial Electrician Assistant CIP 46.0302.02

This pathway prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems in residential, commercial, and industrial electric power wiring, DC and AC motor controls, and electrical distribution panels. The pathway includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical inspecting and inspection, and applicable codes and standards. Instruction includes 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
Complete (4) four credits:

- **460312** Electrical Construction I
- **460316** Circuits I
- **460331** Electrical Motor Controls
- **460325** Rotating Machinery Electrical Motor Controls **OR** **460323** Rotating Machinery
- **460345** Co-op* (Electrical)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Heavy Equipment Sciences Programs of Study

Construction Heavy Equipment TRACK Pre-Apprenticeship CIP 49.0202.99

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Heavy Equipment Sciences CIP 49.0202.01

Construction Heavy Equipment TRACK Pre-Apprenticeship CIP 49.0202.99

The Heavy Equipment TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence and pass the end-of-program assessment (students can be enrolled in the 4th course to take the assessment) to receive the industry certification. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Division of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

Please visit the Heavy Equipment TRACK website for more information or a list of participating organizations.

BEST PRACTICE COURSES
Complete (3) three credits:

- **460201** Introduction to Construction Technology
- **460403** Heavy Highway Construction Equipment Repair
- **460404** Heavy Equipment Operation

Complete (1) one credit:

- **460499** Special Topics - Heavy Equipment
- **499925** Basic Troubleshooting
- **499935** Commercial Driver License

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Heavy Equipment Sciences CIP 49.0202.01

The Heavy Equipment Sciences program will prepare students for construction jobs, infrastructure projects (roads, bridges, and ports, otherwise called non-building construction), and mining and timber operations. A trained and experienced equipment operator provides the necessary skills for any project that requires moving and transporting heavy materials or that demands any earthmoving.

BEST PRACTICE COURSES
Complete (3) three credits:

- **460201** Introduction to Construction Technology
- **460403** Heavy Highway Construction Equipment Repair
- **460404** Heavy Equipment Operation

Complete (1) one credit:

- **460499** Special Topics - Heavy Equipment
- **499925** Basic Troubleshooting
- **499910** Industrial Education Co-op*
- **499935** Commercial Driver License

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Masonry Technology Programs of Study

Bricklayer Assistant CIP 46.0101.01

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Masonry TRACK Pre-Apprenticeship CIP 46.0101.99

Bricklayer Assistant CIP 46.0101.01

This program prepares individuals to apply technical knowledge and skills in laying and setting exterior brick, concrete block, hard tile, marble and related materials, using trowels, levels, hammers, chisels, and other hand tools. Instruction includes technical mathematics, blueprint reading, structural masonry, decorative masonry, foundations, reinforcement, mortar preparation, cutting and finishing, and applicable codes and standards.

BEST PRACTICE COURSES
Complete (4) four credits:

- **460112** Introductory Masonry
- **460116** Intermediate Masonry
- **460113** Advanced Masonry
- **499930** Industrial Safety (.5 credit course) **AND** **499920** Basic Blueprint Reading (.5 credit course)
- **460119** Concrete Finishing
- **460183** Internship (Masonry)
- **460180** Co-op* (Masonry)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form

is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Masonry TRACK Pre-Apprenticeship CIP 46.0101.99

The Masonry TRACK is designed as a pre-apprenticeship pathway for students to have the opportunity to enter a postsecondary Registered Apprenticeship training program after graduation while still potentially earning credit for classes taken that relate to the apprenticeship.

Students must complete the four-course sequence and pass the end-of-program assessment (students can be enrolled in the 4th course to take the assessment) to receive the industry certification. In addition, students must either complete eight KYSAFE eTraining modules (click on the green TRACK tab and complete the 8 pre-selected modules) or attain the OSHA 10 or 30 card. The student is to be enrolled in the pathway in TEDS and adhere to deadlines for TEDS and CTE End of Program (EOP) assessments. Upon completion, the student will receive a pre-apprenticeship industry certification issued by the Kentucky Division of Apprenticeship by submitting a transcript and the Skilled Trades TRACK Completion Form. Participating partners will recognize this certification for an interview and possible credit upon acceptance. Credit is at the discretion of the training organization.

Please visit the Masonry TRACK website for more information or a list of participating organizations.

BEST PRACTICE COURSES
Complete (4) four credits:

- **460112** Introductory Masonry
- **460116** Intermediate Masonry
- **460113** Advanced Masonry
- **499930** Industrial Safety (.5 credit course) **AND** **499920** Basic Blueprint Reading (.5 credit course)

Plumbing Technology Programs of Study

Construction TRACK Youth Apprenticeship CIP 46.0000.99

Plumber Assistant CIP 46.0501.02

Construction TRACK Youth Apprenticeship CIP 46.0000.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Plumber Assistant CIP 46.0501.02

This pathway prepares individuals to practice as licensed plumbers by applying technical knowledge and skills to layout, 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. It includes instruction in source determination, water distribution, waste removal, pressure adjustment, fundamental physics, technical mathematics, blueprint reading, pipe installation, pumps, welding and soldering, plumbing inspection, and applicable codes and standards.

BEST PRACTICE COURSES
Complete (2) two credits:

- **460511** Introduction to Plumbing
- **460513** Basic Plumbing Skills

Complete (2) two credits:

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

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Education and Training

Programs of Study

Teaching and Learning CIP 13.0101.00

Teaching and Learning TRACK Youth Apprenticeship 13.0101.99

Course specific documents are available at the Kentucky Department of Education program area page:
Education and Training - Kentucky Department of Education

Teaching and Learning CIP 13.0101.00

This pathway focuses on the general theory and practice of learning and teaching, the basic principles of educational psychology, the art of teaching, the planning and administration of educational activities, school safety and health issues, and the social foundations of education.

BEST PRACTICE COURSES
Complete (3) three credits:

- **331030** The Learning Community
- **331031** The Learner-Centered Classroom
- **331032** The Professional Educator

Complete (1) one credit:

- **331033** Collaborative Clinical Experience
- **331020** Principles of Teaching I **OR** **331034** Principles of Career and Technical Education
- **331035** Introduction to Special Education
- **331036** Teaching Multi Language Learners
- **331037** Teaching and Learning Internship
- **331038** Teaching and Learning Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Teaching and Learning TRACK Youth Apprenticeship 13.0101.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

Existing Education Co-ops*:

- **331037** Teaching and Learning Internship
- **331038** Teaching and Learning Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Engineering Technology

Energy Programs of Study

Engineering Programs of Study

Engineering Hybrid Programs of Study

Course specific documents are available at the Kentucky Department of Education program area page:
Engineering Technology Education - Kentucky Department of Education

Energy Programs of Study

Energy Management CIP 15.0503.02

Sustainability and Energy Application Technician CIP 15.0503.01

Energy Management CIP 15.0503.02

Entry-level positions in the energy production industry include renewable energy sales, LEED consultants, alternative energy consultants, and residential audits. Energy Management graduates can also find employment in the growing fields of energy audit, energy consulting, and facilities management. Employment opportunities are expected to be the greatest in metropolitan areas.

BEST PRACTICE COURSES
Complete (4) four credits:

- **210245** Energy I: Energy Industry Basics
- **210246** Energy II: Power Generation and Distribution
- **210247** Energy III: Emerging Technologies in Energy
- **210248** Energy IV: Sustainability Management

Sustainability and Energy Application Technician CIP 15.0503.01

This pathway prepares students to apply 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 studying safety and leadership skills.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210341** Foundations of Energy
- **210242** Introduction to Alternative Energy

Complete (2) two credits:

- **210243** Alternative Energy
- **210244** Global Energy Issues
- **210142** Power and Energy Equipment Technology
- **210331** Engineering Internship
- **210330** Engineering Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Engineering Programs of Study

Aerospace Engineering CIP 14.0201.01

Automation Engineering CIP 15.0613.00

Civil Engineering CIP 14.0801.00

Electrical/Electronics Engineering CIP 14.1001.00

Engineering Design CIP 15.1302.00

Engineering TRACK Youth Apprenticeship CIP 15.0000.99

Mechanical Engineering CIP 14.3501.00

Aerospace Engineering CIP 14.0201.01

This pathway prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of aircraft, space vehicles, and their systems; applied research on flight characteristics; and the development of systems and procedures for the launching, guiding, and controlling of air and space vehicles. Aerospace engineers primarily design aircraft, spacecraft, satellites, and missiles. In addition, they test prototypes to ensure they function according to design.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210226** Introduction to Aerospace and Aviation
- **210221** Engineering I
- **210222** Engineering II

Complete (1) one credit:

- **210229** Aerospace Engineering

Complete (1-2) one – two credits:

- **332001** Introduction to 3D Printing Technology
- **210232** Electrical/Electronics Engineering
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Automation Engineering CIP 15.0613.00

This pathway prepares individuals to apply scientific and mathematical principles to the design, development, and implementation of automated and robotic systems. The pathway includes instruction in materials science and engineering, manufacturing processes, process engineering, assembly and product engineering, robotic systems design, and manufacturing competitiveness. Automation Engineers plan manufacturing practices by researching and developing tools, processes, machines, and equipment to integrate the facilities and systems for producing quality products with the optimal capital expenditure.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (2-3) two – three credits:

- **332001** Introduction to 3D Printing Technology
- **210135** Industrial Engineering
- **210225** Manufacturing Engineering
- **210230** Mechatronics Engineering
- **210238** Robotics Engineering
- **210239** Robotics Automation and Design
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

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Civil Engineering CIP 14.0801.00

This pathway generally prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of structural, loadbearing, material moving, transportation, water resource, material control systems, and environmental safety measures. Civil engineers design, build, supervise, operate, and maintain construction projects and systems in the public and private sectors, including roads, buildings, airports, tunnels, dams, bridges, and water supply and sewage treatment systems.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (1) one credit:

- **210223** Civil Engineering

Complete (1-2) one – two credits:

- **332001** Introduction to 3D Printing Technology
- **210241** Introduction to Geographical Information Systems (GIS)
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210250** Environmental Engineering
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

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Electrical/Electronics Engineering CIP 14.1001.00

This pathway prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of electrical electronic-related systems and their components. Electrical engineers design, develop, test, and supervise electrical equipment manufacturing, such as electric motors, electrical controls, instrumentation, HMI Interfaces, PLCs, industrial controls, and power generation equipment. Electrical engineers design, develop, test, and supervise electrical equipment manufacturing, such as electric motors, radar and navigation systems, communications systems, and power generation equipment. Electronics engineers design and develop electronic equipment, including broadcast and communications systems like portable music players and Global Positioning System (GPS) devices.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (1) one credit:

- **210232** Electrical/Electronics Engineering

Complete (1-2) one – two credits:

- **332001** Introduction to 3D Printing Technology
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

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Engineering Design CIP 15.1302.00

This pathway is designed for students interested in the various disciplines of engineering. The course sequence will allow students to develop critical thinking skills and an 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 two-dimensional and three-dimensional engineering design software, solid modeling, and engineering animation to solve real-world problems.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210221** Engineering I
- **210222** Engineering II
- **210138** Technical Design I
- **210108** Technical Design II

Complete (2-3) two – three credits:

- **332001** Introduction to 3D Printing Technology
- **210241** Introduction to Geographical Information Systems (GIS)
- **210140** Architectural Design
- **210141** Building Construction Technologies
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210250** Environmental Engineering
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

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Engineering TRACK Youth Apprenticeship CIP 15.0000.99

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The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Mechanical Engineering CIP 14.3501.00

This pathway prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of physical systems used in manufacturing and end-product systems for specific uses, including machine tools, jigs and other manufacturing equipment; stationary power units and appliances; engines; self-propelled vehicles; housings and containers; hydraulic and electric systems for controlling movement; and the integration of computers and remote control with operating systems. Mechanical Engineers design, develop, build, and test mechanical and thermal sensors and devices, including tools, engines, and machines.

BEST PRACTICE COURSES
Complete (1-2) one – two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (1-2) one – two credits:

- **210238** Robotics Engineering
- **210118** Mechanical Engineering

Complete (1-2) one – two credits:

- **332001** Introduction to 3D Printing Technology
- **210232** Electrical/Electronics Engineering
- **210117** Advanced Design Applications
- **210251** Unmanned Aircraft Systems
- **210110** Engineering Capstone
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **331034** Principles of Career and Technical Education
- **110701** AP Computer Science A **OR** **110711** AP Computer Science Principles **OR** **110251** Computational Thinking

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Engineering Hybrid Programs of Study

Additive Manufacturing CIP 15.1307.00

Automotive Engineering CIP 15.0803.00

Computerized Manufacturing and Machining (CMM) Engineering CIP 48.0510.00

Construction Architectural Engineering CIP 15.0101.02

Design Engineering CIP 15.1304.00

Electrical Construction Engineering CIP 15.0303.00

Fabrication Engineering CIP 14.1901.00

Industrial Maintenance Engineering CIP 14.4101.00

Structural Engineering CIP 14.0803.00

Welding Engineering CIP 15.0614.00

Wood Manufacturing Engineering CIP 03.0509.00

Additive Manufacturing CIP 15.1307.00

A program that prepares individuals to apply technical knowledge and skills in using three-dimensional (3D) computer technology to create technical illustrations and models used in manufacturing, design, production, and construction. Includes instruction in 3D computer-aided design (CAD), 3D printing, 3D model design and construction, and 3D scanning.

BEST PRACTICE COURSES
Complete (3) three credits:

- **332001** Introduction to 3D Printing Technology
- **332002** Engineering Mechanics for 3D Printing
- **332003** Additive Manufacturing Applications

Complete (1) one credit:

- **210110** Engineering Capstone
- **480179** Special Problems (CAD)
- **110226** Project-Based Programming
- **210331** Engineering Internship
- **210330** Engineering Co-op*
- **480145** Internship (CAD)
- **480142** Co-op* I (CAD)
- **110919** Computer Science Internship
- **110918** Computer Science Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Automotive Engineering CIP 15.0803.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply 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. It 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
Complete (4) four credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **470507** Automotive Maintenance and Light Repair Section A
- **470509** Automotive Maintenance and Light Repair Section B

Computerized Manufacturing and Machining (CMM) Engineering CIP 48.0510.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 that direct machines to cut and shape metal or plastic for airplanes, automobiles and other industrial machines. CMM Engineers use blueprints and three-dimensional computer designs to create programs that produce precisely cut products.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210118** Mechanical Engineering
- **210135** Industrial Engineering
- **210225** Manufacturing Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **470913** Fundamentals of Machine Tools-A
- **470914** Fundamentals of Machine Tools-B
- **470915** Manual Programming

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Construction Architectural Engineering CIP 15.0101.02

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply engineering principles and technical skills to support architects, engineers and planners 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, computer-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210223** Civil Engineering
- **210140** Architectural Design
- **210141** Building Construction Technologies

Complete (2) two credits:

- **460201** Introduction to Construction Technology
- **460213** Ceiling and Roof Framing
- **460212** Floor and Wall Framing

Design Engineering CIP 15.1304.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 and computer-aided design (CAD) software such as AutoCAD, Autodesk Inventor, or Solidworks. 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 use CAD (computer-aided design) software to plan and develop models.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II
- **210138** Technical Design I
- **210108** Technical Design II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480110** Introduction to Computer-Aided Drafting
- **480113** Engineering Graphics
- **480135** Mechanical Design
- **480136** Parametric Modeling

Electrical Construction Engineering CIP 15.0303.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway 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, DC and AC motors, controls, and electrical distribution panels. It 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
Complete (4) four credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **460316** Circuits I
- **460319** Circuits II

Fabrication Engineering CIP 14.1901.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. Fabrication Engineers design parts to engineering specifications to develop metal parts and interior metal structures. Fabrication Engineers work with Sheet Metal Technicians to develop complex geometrical parts. The Fabrication Engineer directly supports the manufacturing industry in designing, fabricating, modifying and developing metal assemblies, components and sub-assemblies.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480816** Metal Trade Information and Metals
- **480813** Parallel Line Layout
- **480817** Sheet Metal 1-A
- **480818** Sheet Metal 1-B

Industrial Maintenance Engineering CIP 14.4101.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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, 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
Complete (2) two credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **210230** Mechatronics Engineering
- **210225** Manufacturing Engineering
- **210135** Industrial Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **470348** Industrial Maintenance Electrical Motor Controls
- **470322** Industrial Maintenance Electrical Principles
- **470330** Industrial Maintenance of PLC's

Structural Engineering CIP 14.0803.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply engineering principles and technical skills to support architects, engineers and planners in designing and developing buildings, urban complexes, and related systems. It 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
Complete (2) two credits:

- **210221** Engineering I
- **210223** Civil Engineering
- **210141** Building Construction Technologies

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **460201** Introduction to Construction Technology
- **460218** Construction Forms
- **460214** Site Layout and Foundations

Welding Engineering CIP 15.0614.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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, shipbuilding, aircraft and mobile home industries. Welding Engineers must know about cutting processes and gas metal arc welding procedures to develop these industrial processes efficiently.

BEST PRACTICE COURSES

Complete (2) two credits:

- **210221** Engineering I
- **210222** Engineering II
- **210138** Technical Design I
- **210108** Technical Design II

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480505** Blueprint Reading for Welding
- **480501** Cutting Processes and Lab
- **480522** Gas Metal Arc Welding and Lab
- **480521** Shielded Metal Arc Welding (SMAW) and Lab

Wood Manufacturing Engineering CIP 03.0509.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering 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 to cut, shape wood, prepare surfaces, and form a completed product.

BEST PRACTICE COURSES
Complete (2) two credits:

- **210221** Engineering I
- **210225** Manufacturing Engineering

Complete (2) two credits:

- **332001** Introduction to 3D Printing Technology
- **480731** Cabinet Making Technology
- **480725** CAD for Wood Technology
- **480721** Furniture Technology
- **480716** Lumber Grading and Drying
- **480740** Wood Product Manufacturing
- **480733** Advanced Wood Processing

Family and Consumer Sciences

Programs of Study

Consumer and Family Services CIP 19.0403.00

Consumer and Family Services TRACK Youth Apprenticeship CIP 19.0403.99

Culinary and Food Services CIP 12.0500.00

Culinary and Food Services TRACK Youth Apprenticeship CIP 12.0500.99

Early Childhood Education CIP 13.1210.00

Early Childhood Education TRACK Youth Apprenticeship CIP 13.1210.99

Fashion and Interior Design CIP 50.0407.00

Food Science and Dietetics CIP 51.3199.00

Fundamentals of Teaching CIP 13.1308.00

Hospitality, Travel, Tourism and Recreation CIP 52.1910.00

Course specific documents are available at the Kentucky Department of Education program area page:
Family and Consumer Sciences Education - Kentucky Department of Education

Consumer and Family Services CIP 19.0403.00

The Consumer and Family Services pathway helps students develop knowledge and skills that span a broad range of Family and Consumer Sciences content areas and are central to career areas involving human services, consumer services, consumer protection, advising, education and training, and social and community services.

BEST PRACTICE COURSES
Complete (3) three credits:

- **200113** FCS Essentials **OR 200161** FCS Essentials Health (.5 credit)
- **080719** Financial Literacy **OR 201015** Consumer Economics within Social Studies
- **200171** Relationships (.5 or 1 credit)
- **200226** Middle to Late Lifespan Development (.5 or 1 credit)

Complete (1) one credit:

- **200441** Foods and Nutrition
- **200173** Parenting (.5 or 1 credit)
- **200192** Consumer and Family Services Internship
- **200191** Consumer and Family Services Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Consumer and Family Services TRACK Youth Apprenticeship CIP 19.0403.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Culinary and Food Services CIP 12.0500.00

The Culinary and Food Service Pathway addresses a skill set necessary for success in the culinary and food service industries. The courses in this pathway will help students develop skills in early career ladder positions and promote continuing education at the postsecondary level, preparing for careers associated with restaurants, institutional food service, hospitality, catering, and food and beverage operations.

BEST PRACTICE COURSES
Complete (3) three credits:

- **200441** Foods and Nutrition
- **200411** Culinary Arts I
- **200412** Culinary Arts II

Complete (1) one credit:

- **200113** FCS Essentials **OR** **200161** FCS Essentials Health (.5 credit)
- **200442** Advanced Foods and Nutrition (.5 or 1 credit)
- **200478** Culinary Arts Internship
- **200409** Culinary Arts Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Culinary and Food Services TRACK Youth Apprenticeship CIP 12.0500.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Early Childhood Education CIP 13.1210.00

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

BEST PRACTICE COURSES
Complete (3) three credits:

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

Complete (1) one credit:

- **200171** Relationships (.5 or 1 credit)
- **200173** Parenting (.5 or 1 credit)
- **200113** FCS Essentials **OR** **200161** FCS Essentials Health (.5 credit)
- **331020** Principles of Teaching
- **200201** Early Childhood Education Internship
- **200210** Early Childhood Education Co-op*

[*] Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Early Childhood Education TRACK Youth Apprenticeship CIP 13.1210.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Fashion and Interior Design CIP 50.0407.00

The Fashion and Interior Design pathway will address a skill set necessary for success in the fashion industry and a career in the residential housing and furnishings industry. This pathway targets individuals 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.

BEST PRACTICE COURSES
Complete (3) three credits:

- **200113** FCS Essentials
- **200821** Fashion and Interior Design I
- **200825** Fashion and Interior Design II

Complete (1) one credit:

- **080719** Financial Literacy
- **200826** Fashion and Interior Design III
- **200801** Fashion and Interior Design Internship
- **200810** Fashion and Interior Design Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Food Science and Dietetics CIP 51.3199.00

The Food Science and Dietetics pathway addresses competencies and a skill set necessary for success as a pre-professional in a career focusing on food science. It will facilitate employment in early career ladder positions and promote continuing education at the postsecondary level in career areas involving food science, food safety, food quality, food technology, or food preservation and packaging.

BEST PRACTICE COURSES
Complete (3) three credits:

- **200441** Foods and Nutrition
- **200442** Advanced Foods and Nutrition (.5 or 1 credit)
- **200414** Fundamentals of Dietetics
- **200415** Nutritional Food Science **OR** **200416** Nutritional Food Science (Interdisciplinary)

Complete (1) one credit:

- **200113** FCS Essentials **OR** **200161** FCS Essentials Health (.5 credit)
- **010702** Food Science and Technology
- **200492** Food Science and Dietetics Internship
- **200491** Food Science and Dietetics Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Fundamentals of Teaching CIP 13.1308.00

The Fundamentals of Teaching pathway will facilitate employment in early career ladder positions and promote continuing education at the postsecondary 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, nonprofit, and corporate settings.

BEST PRACTICE COURSES
Complete (3) three credits:

- **200223** Early Lifespan Development
- **200226** Middle to Late Lifespan Development (.5 or 1 credit)
- **331020** Principles of Teaching I
- **331021** Principles of Teaching II

Complete (1) one credit:

- **331034** Principles of Career and Technical Education
- **200199** FCS Leaders at Work
- **200113** FCS Essentials
- **200171** Relationships (.5 or 1 credit)
- **200292** Fundamentals of Teaching Internship
- **200291** Fundamentals of Teaching Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Hospitality, Travel, Tourism and Recreation CIP 52.1910.00

The Hospitality, Travel, Tourism and Recreation career pathway prepares individuals to provide services in the hospitality and leisure fields. Includes instruction in hospitality operations, customer sales, marketing techniques, assistance operations and techniques, essential office management, sports, recreation and equipment management, and food and beverage services. The Hospitality, Travel, Tourism and Recreation career pathway is a hybrid pathway that consists of courses within Family and Consumer Sciences Education and Marketing Education. It blends two program areas to help students explore technical skills in the industry.

BEST PRACTICE COURSES
Complete (3) three credits:

- **080910** Principles of Hospitality **OR** **200610** Principles of Hospitality
- **080716** Marketing Principles
- **200641** Specialized Services in Hospitality
- **080717** Marketing Applications
- **080911** Travel and Tourism Marketing
- **200442** Advanced Foods and Nutrition

Complete (1) one credit:

- **080310** Principles of Entrepreneurship
- **200441** Foods and Nutrition **OR** **200113** FCS Essentials
- **200601** Internship: Hospitality, Travel, Tourism and Recreation
- **200690** Co-op*: Hospitality, Travel, Tourism and Recreation
- **080708** Marketing Education Internship
- **080707** Marketing Education Co-op*
- **081121** Sports and Event Marketing
- **060109** Ethical Leadership

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Healthcare

Programs of Study

Allied Health CIP 51.0000.01

Biomedical Sciences CIP 26.0102.00

Clinical Medical Assisting CIP 51.0801.00

Dental Assisting CIP 51.0601.01

EKG Technology/Technician CIP 51.0902.01

Emergency Medical Technology/Technician CIP 51.0904.01

Healthcare TRACK Youth Apprenticeship CIP 51.9900.99

Medical Administrative Assisting CIP 51.0710.00

Patient Care Technician CIP 51.1614.00

Pharmacy Technician CIP 51.0805.01

Phlebotomy Technician CIP 51.1009.01

Pre-Nursing CIP 51.2699.01

Veterinary Assistant CIP 51.0808.00

Course specific documents are available at the Kentucky Department of Education program area page:
Healthcare - Kentucky Department of Education

Allied Health CIP 51.0000.01

This pathway is a general, introductory, undifferentiated, or joint pathway in health services occupations that prepares individuals for either entry into specialized training programs or various 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
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170501** Allied Health Core Skills

Complete (1) one credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy (Science course)
- **170143** Introduction to Public Health
- **170169** Medical Math (.5 or 1 credit)
- **170550** Internship: Allied Health
- **170503** Co-op* (Allied Health)
- **170908** Introduction to Behavioral Health

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Biomedical Sciences CIP 26.0102.00

This pathway 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 the title. Includes instruction in any basic medical sciences at the research level, biological science research in biomedical facilities, and general studies encompassing various biomedical disciplines.

BEST PRACTICE COURSES
Complete (4) four credits:

- **170701** Principles of Biomedical Science
- **170702** Human Body Systems
- **170703** Medical Interventions
- **170704** Biomedical Innovations
- **170708** Internship: Biomedical Science

Clinical Medical Assisting CIP 51.0801.00

Under physicians' supervision, this pathway prepares individuals to provide medical office administrative services and perform clinical duties, including patient intake and care, routine diagnostic and recording procedures, pre-examination and examination assistance, and administering medications and first aid. Includes instruction in basic anatomy and physiology; medical terminology; medical law and ethics; patient psychology and communications; medical office procedures; and clinical diagnostic, examination, testing, and treatment procedures.

BEST PRACTICE COURSES
Complete (4) four credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170169** Medical Math (.5 or 1 credit)
- **170580** Medical Assisting Clinical Procedures
- **170582** Internship: Medical Assisting
- **170581** Co-op*: Medical Assisting

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Dental Assisting CIP 51.0601.01

This pathway 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. It includes instruction in medical recordkeeping, 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
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170552** Internship: Dental Assistant

Complete (1) one credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy
- **170169** Medical Math (.5 or 1 credit)
- **170501** Allied Health Core Skills

EKG Technology/Technician CIP 51.0902.01

This pathway prepares individuals, under the supervision of physicians and nurses, to administer EKG (Electrocardiogram) and ECG (Electrocardiogram) 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 (Electrocardiogram) and ECG (Electrocardiogram) administration, equipment operation and maintenance, interpretation of cardiac rhythm, patient record management, and professional standards and ethics.

BEST PRACTICE COURSES
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170555** EKG Technician

Complete (1) credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy
- **170169** Medical Math (.5 or 1 credit)
- **170549** Internship: EKG

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Emergency Medical Technology/Technician CIP 51.0904.01

This pathway 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 introductory, 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.

This pathway requires an agreement with the Kentucky Board of Emergency Medical Services.

BEST PRACTICE COURSES
Complete (4) four credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **461022** Emergency Medical Technician (EMT)
- **461023** EMS Training

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Healthcare TRACK Youth Apprenticeship CIP 51.9900.99

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The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Medical Administrative Assisting CIP 51.0710.00

This pathway 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
Complete (4) four credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170920** Medical Office Procedures
- **170922** Internship: Medical Administrative Assistant

Complete (1) one credit:

- **170169** Medical Math (.5 or 1 credit) **OR** **170199** Leadership Dynamics

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Patient Care Technician CIP 51.1614.00

The Patient Care Technician Pathway prepares students for entry-level roles in healthcare by teaching essential skills like taking vital signs, assisting with daily patient care, and performing basic clinical procedures. Students gain hands-on experience through labs and clinical settings. This course is ideal for those interested in nursing or allied health careers.

BEST PRACTICE COURSES
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170502** Acute Care Basic Skills

Complete (1) one credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy (Science course)
- **170169** Medical Math (.5 or 1 credit)
- **170504** Internship: Patient Care Technician
- **170505** Co-op* (Patient Care Technician)
- **170908** Introduction to Behavioral Health

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Pharmacy Technician CIP 51.0805.01

Under pharmacists' supervision, this pathway prepares individuals to prepare medications, provide patients with related assistance, and manage pharmacy clinical and business operations. Includes instruction in medical and pharmaceutical terminology, principles of pharmacology and pharmaceutics, 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
Complete (3) credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170558** Pharmacy Technician

Complete (1) credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy
- **170169** Medical Math (.5 or 1 credit)
- **170501** Allied Health Core Skills
- **170614** Pharmacological and Other Therapeutic Modalities
- **170562** Internship: Pharmacy Technician
- **170561** Co-op* (Pharmacy Technician)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Phlebotomy Technician CIP 51.1009.01

This pathway prepares individuals, under the supervision of 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
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170567** Medical Laboratory Aide (Phlebotomist)

Complete (1) one credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy
- **170169** Medical Math (.5 or 1 credit)
- **170501** Allied Health Core Skills
- **170570** Internship: Phlebotomy Technician

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Pre-Nursing CIP 51.2699.01

This pathway introduces students to the foundational skills needed to provide basic nursing care in long-term care and healthcare facilities. Students learn patient care techniques, safety procedures, and effective communication while gaining hands-on experience in clinical settings. This course is ideal for those interested in beginning a career in nursing or healthcare support roles.

BEST PRACTICE COURSES
Complete (3) three credits:

- **170111** Principles of Health Science
- **170141** Emergency Procedures (.5 credit) **AND** **170131** Medical Terminology (.5 or 1 credit)
- **170631** Medicaid Nurse Aide

Complete (1) one credit:

- **170167** Body Structures and Functions **OR** **302631** Anatomy (Science course)
- **170169** Medical Math (.5 or 1 credit)
- **170603** Internship: Pre-Nursing
- **170601** Co-op* (Nursing)
- **170908** Introduction to Behavioral Health

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Veterinary Assistant CIP 51.0808.00

Under the supervision of veterinarians, veterinary technicians, laboratory animal specialists, and zoological professionals, this pathway prepares individuals to provide patient management, care, clinical procedures assistance, and 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
Complete (4) four credits:

- **170801** Principles of Veterinary Assisting
- **170802** Veterinary Assisting Skills
- **170803** Advanced Veterinary Assisting Skills
- **170804** Veterinary Assisting Internship
- **170880** Veterinary Medical Terminology

JROTC / Law and Public Safety

JROTC Programs of Study

U.S. Air Force JROTC CIP 28.0101.00

U.S. Army JROTC CIP 28.0301.00

U.S. Marine Corps JROTC CIP 28.0401.02

U.S. Navy JROTC CIP 28.0401.01

Course specific documents are available at the Kentucky Department of Education program area page:
JROTC - Kentucky Department of Education

U.S. Air Force JROTC CIP 28.0101.00

This pathway introduces students to the theory and principles of aerospace science and leadership education. Air Force JROTC provides education in aviation history, the science of flight, cultural and world studies, space exploration, and management principles. Air Force JROTC engages students in practicing civic responsibility, communication, critical thinking, teamwork, health and wellness, financial literacy, and exploring career opportunities. Air Force JROTC provides STEM and leadership elective opportunities to reinforce learning outcomes. Programs are offered as adjuncts to regular high school instructional programs.

BEST PRACTICE COURSES
Complete (4) four credits:

- **580134** U.S. Air Force JROTC 1
- **580135** U.S. Air Force JROTC 2
- **580136** U.S. Air Force JROTC 3
- **580137** U.S. Air Force JROTC 4

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **580100** U.S. Air Force Drill and Ceremonies (.5 credit)
- **580101** U.S. Air Force Wellness (.5 credit)
- **580138** U.S. Air Force Honors Senior Project
- **580102** U.S. Air Force Aviation Honors Ground School (AHGS)

U.S. Army JROTC CIP 28.0301.00

Army JROTC is a four-year sequence of courses in the Army Junior Reserve Officers' Training Corps (JROTC) high school program. This pathway's design focuses on developing better citizens by building skills in leadership, personal growth and behaviors, citizenship, decision-making, health and fitness, first aid, team building, service learning, and geography, all within a student-centered learning environment. It prepares high school students through Leadership, Education and Training (LET) for responsible leadership roles while making them aware of their rights, responsibilities, and privileges as American citizens. The program is a stimulus for promoting college and career readiness, and it provides instruction and rewarding opportunities that will benefit the student, community, and nation.

The Army JROTC program cooperates between the Army and the host school.

The Leadership Education Curriculum focuses on the development of cadet leadership skills, which are directly linked to the NOCTI *Leadership and Employability Skills* credential, earning students three college credits upon successful completion; covered topics include civic duty and citizenship, ethical behavior, sound values, good moral judgment, and U.S. National government.

BEST PRACTICE COURSES
Complete (3) three credits:

- **580240** U.S. Army JROTC LET 1
- **580241** U.S. Army JROTC LET 2
- **580242** U.S. Army JROTC LET 3

Complete (1) one credit:

- **580243** U.S. Army JROTC LET 4 **OR** **580244** U.S. Army JROTC Leadership

U.S. Marine Corps JROTC CIP 28.0401.02

This pathway introduces students to the theory and practice of naval science and life in the U.S. Marine Corps. It prepares them for cadet status (Junior ROTC or JROTC) or 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
Complete (3) three credits:

- **580320** U.S. Marine Corps JROTC 1
- **580321** U.S. Marine Corps JROTC 2
- **580322** U.S. Marine Corps JROTC 3

Complete (1) one credit:

- **580323** U.S. Marine Corps JROTC 4 **OR** **580324** U.S. Marine Corps JROTC Leadership

U.S. Navy JROTC CIP 28.0401.01

This pathway introduces students to the theory and practice of naval science and life in the U.S. Navy. It prepares them for cadet status (Junior ROTC or JROTC) or 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
Complete (3) three credits:

- **580310** U.S. Navy JROTC 1
- **580311** U.S. Navy JROTC 2
- **580312** U.S. Navy JROTC 3

Complete (1) one credit:

- **580313** U.S. Navy JROTC 4 **OR** **580314** U.S. Navy JROTC Leadership

Law and Public Safety Programs of Study

Fire Science/Firefighting CIP 43.0203.00

Law Enforcement Services CIP 43.0107.00

Pre-Law Studies CIP 22.0001.00

Law and Public Safety TRACK Youth Apprenticeship CIP 43.9999.99

Course specific documents are available at the Kentucky Department of Education program area page:
Law and Public Safety - Kentucky Department of Education

Fire Science/Firefighting CIP 43.0203.00

Upon completing the fire science pathway, students will possess knowledge and skills to increase employability/advancement in the fire service. Topics and subjects covered are related to many job performance requirements found in NFPA 1001, Standard for Firefighter Professional Qualifications, Firefighter I level and NFPA 1072; Hazardous Materials Response Personnel Professional Qualifications, Awareness and Operations Levels. Basic First Aid, CPR, and proper utilization of an AED will also be covered in the scope of this pathway.

BEST PRACTICE COURSES
Complete (4) four credits:

- **461032** Basic Firefighting I / Introduction to Patient Care
- **461034** Basic Firefighting II / Hazardous Materials Awareness
- **461031** Basic Firefighting III / Hazardous Materials Operations
- **461036** Basic Firefighting IV
- **461068** Internship: Fire Service
- **461063** Co-op*: Fire Service

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **461024** Emergency Medical Responder
- **461069** Special Topics: Fire Science

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Law Enforcement Services CIP 43.0107.00

Students participating in this pathway will learn the basics of our criminal justice system. They will explore our U.S. Constitution and see how it protects citizens and guides law enforcement. Students will also have opportunities to learn crime scene processing, apply criminal law, lead an investigation, dispatch service calls, provide primary emergency medical care and respond to disasters. Students are prepared for careers in law, law enforcement, homeland security, corrections, federal agencies, investigations, forensics, emergency services and similar fields.

BEST PRACTICE COURSES
Complete (2) two credits:

- **461044** Foundations of Justice and Public Safety
- **461045** Law Enforcement

Complete (2) two credits:

- **461043** Criminal Investigation and Forensics
- **461053** Constitutional and Criminal Law
- **461030** Emergency Management and Homeland Security
- **461037** Detention and Corrections
- **461011** Basic Telecommunications
- **461094** Internship: Public Services/Protective Services
- **461096** Co-op*: Public Services/Protective Services

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **461099** Special Topics: Public Services/Protective Services

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Pre-Law Studies CIP 22.0001.00

Students will obtain skills in preparation for legal careers in private law firms, public law offices, courtrooms, mediation, and businesses. Instruction will cover legal vocabulary and writing, ethics, crimes, constitutional rights, the trial process, legal standards in investigations, effective and persuasive communication (oral and written), case and trial preparation, and the state and federal court systems.

BEST PRACTICE COURSES

Complete (4) four credits:

- **461051** Introduction to Legal Studies
- **461020** Criminal Law
- **461019** Civil Law
- **461025** Advanced Constitutional and Criminal Law
- **461095** Internship: Pre-Law
- **461097** Co-op*: Pre-Law

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **461052** Trial Advocacy
- **461098** Special Topics: Pre-Law

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Law and Public Safety TRACK Youth Apprenticeship CIP 43.9999.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Media Arts

Programs of Study

Cinematography and Video Production CIP 09.0701.00

Graphic Design CIP 50.0401.00

Interactive Media CIP 10.0304.00

Course specific documents are available at the Kentucky Department of Education program area page:
Media Arts - Kentucky Department of Education

Cinematography and Video Production CIP 09.0701.00

The Cinematography and Video Production pathway prepares students to communicate dramatic information, ideas, moods, and feelings by making and producing videos and cinematographic expressions. 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 multimedia production. The pathway prepares students to function as staff, producers, directors, and managers of media programming and media organizations. Topics of study in this pathway include 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; transmission, distribution, and marketing; contextual, cultural and historical aspects, and considerations.

BEST PRACTICE COURSES
Complete (1) credit:

- **480901** Introduction to Media Arts

Complete (3) credits:

- **480910** Video Studio Fundamentals
- **480911** Studio Directing and Performance
- **480912** Advanced Studio Production - Moving Images
- **480951** Media Arts Internship
- **480950** Media Arts Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **480924** Special Topics – Cinematography / Video Production

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Graphic Design CIP 50.0401.00

The Graphic Design pathway prepares students to apply skills that focus on the principles and techniques for effectively communicating ideas/information and packaging products to business and consumer audiences both in digital and other formats. Topics of study in this pathway include aesthetic meaning, appreciation, and analysis; construction, development, processing, modeling, simulation and programming of interactive experiences; transmission, distribution and marketing; contextual, cultural and historical aspects and considerations.

BEST PRACTICE COURSES
Complete (1) credit:

- **480901** Introduction to Media Arts

Complete (3) credits:

- **480920** Two-Dimensional Media Design
- **480921** Digital Imaging
- **480922** Advanced Production Design
- **480951** Media Arts Internship
- **480950** Media Arts Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **480923** Special Topics – Graphic Design

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Interactive Media CIP 10.0304.00

The Interactive Media 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 to communicate messages simulating real-world content. The pathway includes instruction in specialized camerawork and equipment operation and maintenance, image capture, computer applications, dubbing, and applications to specific commercial, industrial, and entertainment needs. Topics of study in this pathway include aesthetic meaning, appreciation and analysis; construction, development, processing, modeling, simulation, and programming of interactive experiences; transmission, distribution and marketing; contextual, cultural and historical aspects and considerations.

BEST PRACTICE COURSES
Complete (1) credit:

- **480901** Introduction to Media Arts

Complete (3) credits:

- **480902** Interactive Design
- **480903** Moving Image Animation
- **480904** Virtual Design
- **480951** Media Arts Internship
- **480950** Media Arts Co-op*

Upon completion of a pathway, additional course(s) to enhance student learning is encouraged. Credits earned in advanced or complementary course(s) “Beyond the Pathway” cannot be substituted for pathway courses to achieve concentrator or completer status.

- **480925** Special Topics – Interactive Media

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Transportation

Automotive Education Programs of Study

Collision Repair Technology Programs of Study

Diesel/Medium-Heavy Truck Technology Programs of Study

Flight and Aviation Programs of Study

Course specific documents are available at the Kentucky Department of Education program area page:
Transportation Education - Kentucky Department of Education

Automotive Education Programs of Study

Automotive Maintenance and Light Repair Technician CIP 47.0604.01

Automobile Service Technology CIP 47.0604.02

Automotive Engineering CIP 15.0803.00

Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

Automotive Maintenance and Light Repair Technician CIP 47.0604.01

This pathway prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. It 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 conditioning systems.

BEST PRACTICE COURSES
Complete (4) four credits:

- **470507** Automotive Maintenance and Light Repair Section A
- **470509** Automotive Maintenance and Light Repair Section B
- **470511** Automotive Maintenance and Light Repair Section C
- **470513** Automotive Maintenance and Light Repair Section D
- **470501** Co-op* I (Auto)

Automobile Service Technology CIP 47.0604.02

This pathway prepares individuals to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. It 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 conditioning systems.

BEST PRACTICE COURSES
Complete (4) four credits:

- **470515** Automobile Service Technology Section A
- **470517** Automobile Service Technology Section B
- **470519** Automobile Service Technology Section C
- **470521** Automobile Service Technology Section D
- **470501** Co-op* I (Auto)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Automotive Engineering CIP 15.0803.00

This pathway provides the opportunity to blend Career and Technical Education (CTE) courses with Engineering courses to help students apply technical skills along with Science, Technology, Engineering, and Math (STEM) skills to solve real-world problems. This pathway prepares individuals to apply 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. It 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
Complete (4) four credits:

- **210221** Engineering I
- **210232** Electrical/Electronics Engineering
- **470507** Automotive Maintenance and Light Repair Section A
- **470509** Automotive Maintenance and Light Repair Section B

Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

The TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Collision Repair Technology Programs of Study

Entry Level Collision Repair Painter CIP 47.0603.01

Entry Level Non-Structural Damage and Repair Technician CIP 47.0603.03

Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

Entry Level Collision Repair Painter CIP 47.0603.01

A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. It includes instruction in damage repair, painting and refinishing techniques, and damage analysis and estimating.

Note: The courses listed in the Entry Level Collision Repair Painter Pathway also apply to schools using the **ICar** PDP-EE (Professional Development Program - Education Edition) Curriculum to teach the classes. The only exception for schools using the **ICar** Curriculum is that 470631 Introduction to Collision Repair is no longer an option and must be chosen over any other option listed. Programs using the **ICar** PDP-EE (Professional Development Program - Education Edition) Curriculum are eligible to test their students with the **ICar** Refinish Pro- Level 1 Exam. This Exam will meet the Valid Industry Certification requirements for this pathway. Students passing this exam will receive an **ICar** Refinish Platinum 1 Status Certificate.

BEST PRACTICE COURSES
Complete (3.5) three- and one-half credits:

- **470639** Painting and Refinishing I
- **470640** Painting and Refinishing II
- **470645** Painting and Refinishing III
- **470628** Damage Analysis, Estimating and Customer Service (.5 credit)
- **470601** Co-op* I (Collision Repair)

Complete (.5) one-half credit:

- **470647** Painting and Refinishing Special Projects (.5 credit) **OR** **470631** Introduction to Collision Repair (.5 credit)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Entry Level Non-Structural Damage and Repair Technician CIP 47.0603.03

A program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. It includes instruction in damage repair, non-structural analysis, plastics and adhesives, and damage analysis and estimating.

Note: The courses listed in the Entry Level Non-Structural Damage and Repair Technician Pathway also apply to schools using the **ICar** PDP-EE (Professional Development Program - Education Edition) Curriculum to teach the classes. The only exception for schools using the **ICar** Curriculum is that 470631 Introduction to Collision Repair is no longer an option and must be chosen over any other option listed. Programs using the **ICar** PDP-EE (Professional Development Program - Education Edition) Curriculum are eligible to test their students with the **ICar** Non-Structural Pro-Level 1 Exam. This Exam will meet the Valid Industry Certification requirements for this pathway. Students passing this exam will receive an **ICar** Non-Structural Platinum 1 Status Certificate.

BEST PRACTICE COURSES
Complete (4) four credits:

- **470633** Non-Structural Analysis and Damage Repair I
- **470644** Non-Structural Analysis and Damage Repair II
- **470649** Non-Structural Analysis and Damage Repair III
- **470628** Damage Analysis, Estimating and Customer Service (.5 credit)
- **470651** Non-Structural Analysis and Damage Repair Special Projects (.5 credit) **OR** **470631** Introduction to Collision Repair (.5 credit)
- **470601** Co-op* I (Collision Repair)

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Diesel/Medium-Heavy Truck Technology Programs of Study

Diesel Medium Heavy Truck Inspection, Maintenance, and Minor Repair Technician CIP 47.0605.07

Diesel Medium/Heavy Truck Service Technology Technician (TST) CIP 47.0605.08

Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

Diesel Medium Heavy Truck Inspection, Maintenance, and Minor Repair Technician CIP 47.0605.07

This program introduces the student to the tasks/standards included in Inspection, Maintenance, and Minor Repair (IMMR). The tasks included in the Inspection, Maintenance, and Minor Repair option are entry-level technician inspection tasks designed to introduce the student to correct procedures and practices of vehicle inspection in a teaching/learning environment. These courses will instruct the student in the principles, theories, and concepts of Medium/ Heavy Duty Diesel Truck Technology and include instruction in Diesel Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Drivetrains, Preventive Maintenance, and Engine Performance Systems.

BEST PRACTICE COURSES
Complete (4) four credits:

- **470450** Diesel Medium/Heavy Duty Truck IMMR Section A
- **470451** Diesel Medium/Heavy Duty Truck IMMR Section B
- **470452** Diesel Medium/Heavy Duty Truck IMMR Section C
- **470453** Diesel Medium/Heavy Duty Truck IMMR Section D
- **470442** Co-op* I (Diesel)

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Diesel Medium/Heavy Truck Service Technology Technician (TST) CIP 47.0605.08

This program presents the theory, component identification, operation, diagnosis, and service and repair of Medium/Heavy Duty Truck Diesel Engines, Brake Systems, Electrical/ Electronic Systems, Suspension and Steering Systems, Drivetrain Systems, Engine Performance Systems, and Preventive Maintenance. The instruction will also include identifying and using appropriate tools and testing/measurement equipment required to accomplish specific tasks. The student will also locate and use current reference and training materials from accepted industry publications and resources and write industry-standard work orders.

BEST PRACTICE COURSES
Complete (4) courses:

- **470460** Diesel Medium/Heavy TST Section A
- **470461** Diesel Medium/Heavy TST Section B
- **470462** Diesel Medium/Heavy TST Section C
- **470463** Diesel Medium/Heavy TST Section D
- **470442** Co-op* I (Diesel)

Automotive Technology TRACK Youth Apprenticeship CIP 47.0600.99

The Tech Ready Apprentices for Careers in Kentucky or TRACK Youth Apprenticeship program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education (OCTE) and the Kentucky Division of Apprenticeship to provide secondary students career pathway opportunities with employers offering Registered Apprenticeship programs. All hours worked can be counted towards the Registered Apprenticeship on-the-job training component and the CTE courses can be credited towards the Related Technical Instruction component. Click for more information about Registered Apprenticeship.

TRACK Youth Apprenticeship model consists of a minimum of 3 CTE credits related to the apprenticeship and a paid cooperative education placement (co-op*) with a designated employer partner. TRACK is its own career pathway, has designated CIP codes and results in an industry certification. To be enrolled, this TRACK agreement form must be submitted. Once the form is processed and approved, the student will be enrolled in a TRACK database. At the end of the school year, OCTE will then upload that information into TEDS when this TRACK completion form is submitted.

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. For more information, please refer to the TRACK Process Document, Chapter 9 of the Work-Based Learning Manual for Youth Apprenticeship and the TRACK website.

BEST PRACTICE COURSES
Complete (4) four credits.

A minimum of three (3) credits chosen from the partnering CTE program's course offerings that relate to the apprenticeship and a paid co-op*. For more information about co-op*, please see Chapter 8 of the Work-Based Learning Manual.

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Flight and Aviation Programs of Study

Aircraft Maintenance Technician CIP 47.0607.00

Flight and Aeronautics CIP 49.0102.00

Aircraft Maintenance Technician CIP 47.0607.00

This pathway prepares individuals to apply technical knowledge and skills to repair, service, and maintain all aircraft components other than engines, propellers, avionics, and instruments. It includes instruction in the 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.

To gain FAA work experience and training requirements, students must log hours and work with approved FAA-rated Airframe and Powerplant Technicians or Inspection Authorized persons.

BEST PRACTICE COURSES
Complete (3) three credits:

- **210226** Introduction to Aerospace and Aviation
- **210233** Aviation I
- **210139** Introduction to Aircraft Maintenance Technology

Complete (1) one credit:

- **210240** Aviation Capstone
- **210227** Flight and Aviation Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Flight and Aeronautics CIP 49.0102.00

Students will complete the first phase of aviation training leading to a commercial pilot license. They will gain technical knowledge and skills in the flying and navigation of commercial passenger and cargo, agricultural, public service, corporate 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
Complete (3) three credits:

- **210226** Introduction to Aerospace and Aviation
- **210233** Aviation I
- **210234** Aviation II

Complete (1) one credit:

- **210237** Aviation III
- **210240** Aviation Capstone
- **210227** Flight and Aviation Co-op*

* Co-op can only be taken after the first four credits are earned, OR along with another course in the pathway, OR if the student is enrolled in an approved pre-apprenticeship program.

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Perkins Programs of Study Overview and Application

Key Terms and Processes

Overview

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Programs of Study Overview

Career and Technical Education programs of study are designed to prepare students to enter the workforce ready to pursue career opportunities in their chosen path. Students should have a seamless path to follow but have the flexibility to enter and exit the program at multiple points. Intentional planning and alignment of opportunities are considered in the development of career and technical education programs of study to ensure students develop the knowledge and skills necessary for entry into postsecondary education and training programs and/or the workforce. In planning secondary to postsecondary programs of study applications, local school districts and partnering postsecondary institutions shall work together to ensure programs of study are aligned and implemented to meet the specialized needs of business and industry and meet the goals of the student's individual learning plan. Secondary and postsecondary personnel should work together to;

- Identify secondary career and technical education programs of study offered at high school (Starting in 25-26, the complete program must be offered in one building unless the district receives a waiver from KDE.)
- Identify postsecondary programs of study at partnering postsecondary institution.
- All POS must meet the size, scope and quality definition.
- Determine and plan seamless alignment by identifying the secondary general education and technical courses needed for successful entry into the postsecondary program.

Establishing Common OCTE Vocabulary Related to Program Areas and Programs of Study:

In an ongoing effort to demonstrate continuous improvement and simplify processes, OCTE has streamlined the Program of Study (POS) documentation process for 2026-27. Please note the following important distinctions:

- **Program Area** – A **program area** is a broad category that encompasses various related fields of study. It represents a major sector of education and training within the Career and Technical Education (CTE) framework. KY program areas are similar to national career clusters in that they are a system of grouping related occupations and industries that share common skills and knowledge.
- **Career Pathway** – Pursuant to KRS 158.810 and 157.072, a **career pathway** is a **"**coherent, articulated sequence of rigorous academic and career-related courses, commencing in **ninth grade and leading to an associate degree, an industry-recognized certificate or license, or a baccalaureate or higher degree.** A career pathway is developed, implemented, and maintained in partnership among secondary and postsecondary education institutions, businesses, and employers."
- **Career Pathway Program of Study** – Pursuant to KRS 158.810 and 157.072, a **career pathway program of study** is a "coherent, articulated sequence of rigorous academic and career and technical education courses, including dual credit opportunities, that prepares **secondary students** for postsecondary study leading to postsecondary degrees, industry certifications, or licensure."
- **Program of Study (POS)** – Perkins V term used to describe a coordinated, nonduplicative sequence of academic and technical content at the **secondary and postsecondary level**. Per the *Comprehensive Guide to the Federal Role in Career and Technical Education* published by the Bruman Group, programs of study should "run parallel" to career pathways.
- **Perkins State Approved Model Programs of Study** – Initially used as exemplars to show preferred course sequences with seamless transitions from high school to postsecondary education and to assist with the overall transition to Perkins V. Pursuant to Perkins V, Section 124 (b)(1), the original Perkins State Approved Model Programs of Study are listed for reference in the 2026-27 OCTE Programs of Study Directory appendix.
- **2026-2027 Kentucky Programs of Study Directory** – Single comprehensive guide containing all current OCTE/KWIB-approved Programs of Study. Beginning in 2026-27, all districts will select state-approved options published in this guide as the basis for completing the Program of Study application to demonstrate that all Perkins-funded programs of study meet the state's definition of Size, Scope, and Quality.
- **Program of Study Application** – An application used to document the district meets the Perkins Size, Scope and Quality requirements for district CTE programs of study. The application documents district POS:
    - Is of sufficient size, offering a sequence of 4 or more earned technical credits
    - Has a postsecondary connection through dual enrollment, dual credit, current agreement for a program of study or current local articulation agreement approved by the lead administrators of KDE and postsecondary institutions or leads to KDE-approved industry-recognized certifications
    - Has an active advisory panel
    - Has a certified, appropriately endorsed teacher
    - Has a co-curricular career and technical student organization (CTSO) that provides students the opportunity to engage in leadership development activities (Note: Active CTSO affiliation must be established by 12/1 with at least 1 paid member per CTSO chapter.)
    - Is supported by current labor market data

    Program of Study Application Process:

    Step 1: Complete all fields of the Programs of Study Application. (Use the checklist to ensure all application components are complete.)
    Step 2: Submit the completed application to kdeocteposapplicationreview@education.ky.gov for approval. (Note: District name, school name, program area, and POS must be included in the email subject line and POS application document title.)
    Step 3: Add to GMAP the name of the POS approver and the date of email approval.
    Step 4: Upload the approved program of study application to the GMAP documents section.
- **TEDS Pathway Modification** – An application used to document rare, special circumstances in which a district cannot complete a Program of Study Application with options published in the Kentucky Programs of Study Directory. These applications are submitted via TEDS and are approved by OCTE Program Area Consultants, not Perkins Consultants. Once approved in TEDS by OCTE Program Area Consultants, the district must follow up with Steps 1-4 of the Program of Study Application process outlined above.

Programs of Study Application

Effective date:

Postsecondary Institution: **Program Area:**

Secondary School: **Program of Study:**

CTSO Affiliation: **Program CIP Code:**

Grade	**General Education Core** (Ensure Minimum High School Graduation Requirements are Met)	**Technical Core** (Ensure you have a minimum of a 4-credit sequence of High School CTE Courses) Please include the state course codes.	**Diploma, Certification(s), Certificate(s), Degree(s)** (Include any Credentials Students Have the Ability to Earn when Pursuing this Program of Study)
9th	• Math • Science • English • Social Studies • PE • Health • Elective	• CTE Entry Level Course and Course Code and/or Dual Credit Corresponding Technical Course	•
10th	• Math • Science • English • Social Studies • Art/Humanities • Elective	• CTE Intermediate Course and Course Code and/or Dual Credit Corresponding Technical Course	•
11th	• Math • Science • English • Social Studies • Elective	• CTE Intermediate Course and Course Code and/or Dual Credit Corresponding Technical Course	•
12th	• Math • English • Elective	• CTE Advanced/Capstone Course and Course Code and/or Dual Credit Corresponding Technical Course	• High School Diploma • Industry Certification • End-of-Program Assessment • Post-Secondary Certificate
13th	• General Education Courses Required for Certificate/Diploma/Degree	• Technical Courses Required for Certificate/Diploma/Degree	• Industry Certification • Post-Secondary Certificate 1 • Post-Secondary Certificate 2 • Post-Secondary Diploma
14th	• General Education Courses Required for Certificate/Diploma/Degree	• Technical Courses Required for Certificate/Diploma/Degree	• Associate Degree

(May add grades 15 and 16)

Secondary Partner:_____ Date:_____

Postsecondary Partner:_____ Date:_____

(Must include both signatures)

Programs of Study Checklist

Complete the following items prior to sending the Local Program of Study to OCTE for approval. OCTE staff will also use the checklist as part of the Perkins Monitoring Process.	**Self-Check OCTE Check**
Effective Date	
Postsecondary and Secondary Schools Listed	
Correct Career and Technical Student Organization Listed	
Program Area (Must choose 1 of the 12 noted in the Kentucky Programs of Study Directory)	
Program of Study (Must choose from POS title options available in the 12 Program Areas)	
Program Area CIP Code	
Secondary General Education Courses	
Secondary Technical Core Classes, including State Course Codes	
Dual Credit Courses listed (if applicable)	
Secondary Diploma, Certification(s), Certificate(s), Degree(s)	
Postsecondary General Education Courses	
Postsecondary Technical Core Classes	
Postsecondary Diploma, Certification(s), Certificate(s), Degree(s)	
Secondary and Postsecondary signatures/date	
***For secondary schools with a TEDS Program of Study Modification only**, complete the boxes below.*	
TEDS Program of Study Modification approved by (Program Consultant) _____	
Date modification approved _____	
Contacts: Lori Looney, Branch Manager lori.looney@education.ky.gov; Crystal Whitaker, Perkins Consultant, crystal.whitaker@education.ky.gov , Mary DeHarte, Perkins Consultant, mary.deharte@education.ky.gov	

Perkins State Approved Model Programs of Study Reference

Accounting

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Accounting and Finance Foundations (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Financial Management (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Advanced Accounting (1)	
12	○ English (1) – Aligned with student's ILP ○ Personal Finance (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Introduction to Management (1)	○ High School Diploma

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
13-14	○ ENG 101 – Writing I (3) ○ COM 181 – Basic Public Speaking (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ ECO – Any Economics Course (3) ○ MAT 105 – Business Mathematics (3) or Higher Level Quantitative Reasoning ○ Heritage/Humanities (3) ○ Natural Sciences (3)	○ CIT 105 – Introduction to Computers (3) **OR** OST 105 – Introduction to Information Systems (3) ○ ENG 102 – Writing II (3) **OR** OST 235 – Business Communications Technology (3) ○ BAS 160 – Introduction to Business (3) ○ BAS 260 – Professional Development & Protocol (2) ○ BAS 270 – Business Employability Seminar (1) ○ BAS 267 – Introduction to Business Law (3) ○ BAS 282/MKT 282 – Principles of Marketing (3) ○ BAS 283/MGT 283 – Principles of Management (3) ○ ACC 201 – Financial Accounting (3) ○ ACC 202 – Managerial Accounting (3) ○ ACT 279 – Computerized Accounting Systems (3) ○ ACT 281 – Individual Accounting (3) ○ ACT 286 – Financial Accounting Topics (3) ○ BAS 110 – Worksheets Business Application (3) **OR** CIT 130 – Productivity Software (3) **OR** OST 240 – Software Integration (3) ○ ACT 196 – Payroll Accounting (3) ○ BAS 120 – Personal Finance (3)	○ KCTCS General Business Certificate ○ KCTCS Payroll Accounting Specialist Certificate ○ KCTCS Accounting Certificate ○ KCTCS Accounting Recordkeeping Specialist Certificate ○ KCTCS Business Transfer Certificate ○ KCTCS Accounting Diploma and Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Aerospace Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 – Metallic Material Process (3) ○ TEC 161 – Computer Apps in Tech (3) ○ AEM 195 – Computer Aided Drafting (3) ○ EET 251 – Electricity and Electronics (3) ○ AEM 390 – Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 – Introduction to Quality (3) ○ AEM 301 – Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 – Methods Lean Operation (3) ○ AEM 310W – Computer Communication in Industry (3) ○ AEM 330 – Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 – Cooperative Study in Technology (1) ○ CON 420 – Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 – Process Control & Auditing (3) ○ BTS 300 – Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 – Automated Devices (3) ○ AEM 371 – Hydraulics & Pneumatics (3) ○ AEM 407 – Fundamentals of Project Management (3) ○ AEM 408 – Human Resource Development (3) ○ AEM 499 – Manufacturing Senior Project (3) ○ AEM 467 – Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 – College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Aircraft Maintenance Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introduction to Space and Aviation (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Aviation I (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Introduction to Aircraft Maintenance Technology (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Aviation Capstone (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ Quantitative Reasoning (3) ○ Natural Sciences (3) ○ Heritage/Humanities (3) ○ Social/Behavioral Sciences (3) ○ Digital Literacy (0-3)	○ ATE 100 – Aviation Math (3) ○ ATE 102 – Intro to Aviation Maintenance Technology I (3) ○ ATE 104 – Intro to Aviation Maintenance Technology II (3) ○ ATE 106 – Intro to Aviation Maintenance Technology III (3) ○ ATE 108 – Intro to Aviation Maintenance Technology IV (3) ○ ATE 202 – Aircraft Structures I (3) ○ ATE 204 – Aircraft Structures II (3) ○ ATE 206 – Aircraft Structures III (3) ○ ATE 208 – Aircraft Structures IV (3) ○ ATE 222 – Aircraft Systems I (3) ○ ATE 224 – Aircraft Systems II (3) ○ ATE 226 – Aircraft Systems III (3) ○ ATE 228 – Aircraft Systems IV (3) ○ ATE 242 – Aircraft Powerplants I (3) ○ ATE 244 – Aircraft Powerplants II (3) ○ ATE 246 – Aircraft Powerplants III (3) ○ ATE 248 – Aircraft Powerplants IV (3) ○ ATE 252 – Aircraft Powerplant Systems I (3) ○ ATE 254 – Aircraft Powerplant Systems II (3) ○ ATE 256 – Aircraft Powerplant Systems III (3) ○ ATE 258 – Aircraft Powerplant Systems IV (3)	○ KCTCS Airframe Maintenance Technician Certificate ○ KCTCS Powerplant Maintenance Technician Certificate ○ KCTCS Aviation Maintenance Technology Diploma & Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Allied Health

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Health Science (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Emergency Procedures (.5) ○ Medical Terminology (.5)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Allied Health Core Skills (1)	
12	○ English (1) – Aligned with student's ILP ○ Medical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Body Structures and Functions (1)	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ Mathematics (1) ○ Science (1) ○ HIS 108 – History of the U.S. Through 1865 (3) **OR** HIS 109 – History of the U.S. Since 1865 (3) ○ ENG 101 – Writing I (3) ○ MAT 105 – Business Mathematics (3) or higher ○ BIO 135 – Basic Anatomy & Physiology with Lab (4) ○ PSY 110 – General Psychology (3)	○ CIT 105 Intro to Computers (3) **OR** OST 105 Intro to Information Systems (3) ○ OST 110 – Document Formatting & Word Processing (3) ○ AHS 115 Medical Terminology (3) **OR** CLA 131 Medical Terminology from Greek or Latin (3) **OR** MIT 103 Medical Office Terminology (3) ○ MIT 230 – Medical Information Management (3) ○ MIT 217 – Medical Office procedures (3) ○ MIT 104 – Medial Insurance (3) ○ MIT 224 – Medical Practice Management (3) ○ MIT 228 – Electronic Medical Records (3) ○ OST 240 – Software Integration (3) **OR** CIT 130 – Productivity Software (3) ○ Track 1 Course (3) ○ Track 2 Course (3) ○ Track 3 Course (3) ○ Track 4 Course (3) ○ Track 5 Course (3) ○ MIT 295 – Medical Information Technology Capstone (3)	○ KCTCS Medical Receptionist Certificate ○ KCTCS Medical Unit Coord. Certificate ○ KCTCS Track X Diploma & Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Architectural Technology

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introduction to Computer-Aided Drafting (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Introduction to Architecture (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Architectural Design (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Industrial Drafting Processes (1)	○ High School Diploma

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
13-14	○ ACH 100 – Construction Documents I (3) ○ ACH 110 – Survey of Architectural Profession (1) ○ ACH 120 – Theory and History of Architecture I (3) ○ ACH 150 – Construction Documents II (3) ○ ACH 160 – Building Materials and Construction I (3) ○ ACH 161 – Building Materials and Construction II (3) ○ ACH 170 – Theory and History of Architecture II (3) ○ ACH 175 – Intro to Systems (3) ○ ACH 195 – Computer Aided Drafting I (3) ○ ACH 200 – Construction Documents III (3) ○ ACH 225 – Structures (3) ○ ACH 250 – Construction Documents IV (3) ○ ACH 260 – Office Practice (3) ○ ACH 275 – Mechanical and Electrical Systems (3) ○ ENG 101 – Writing I (3) ○ MAT 116 – Technical Mathematics (3) **OR** MAT 150 – College Algebra (3) **OR** Other Quantitative Reasoning approved by coordinator ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Social/Behavioral Sciences (3) ○ Digital Literacy (0-3)	Technical courses: from the list below (10) ○ ACH 180 – Selected Topics in Architectural Technology: (Topic) (1-3) ○ ACH 194 – Visual Composition (3) ○ ACH 198 – Practicum in Architectural Technology (1-3) ○ ACH 280 – Revit/Building Information Modeling (2) ○ ACH 290 – Building Codes I (3) ○ ACH 291 – Construction Management (3) ○ ACH 292 – Building Codes II (3) ○ ACH 293 – Presentation Techniques (3) ○ ACH 294 – Specification Writing (3) ○ ACH 295 – Computer Aided Drafting II (3) ○ ACH 297 – Estimating Techniques (3) ○ ACH 298 – Computer 3D Modeling (3) ○ COE 199 – Cooperative Education: Arch Tech (1-3)	○ KCTCS Architectural Technology Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Automation Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 – Metallic Material Process (3) ○ TEC 161 – Computer Apps in Tech (3) ○ AEM 195 – Computer Aided Drafting (3) ○ EET 251 – Electricity and Electronics (3) ○ AEM 390 – Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 – Introduction to Quality (3) ○ AEM 301 – Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 – Methods Lean Operation (3) ○ AEM 310W – Computer Communication in Industry (3) ○ AEM 330 – Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 – Cooperative Study in Technology (1) ○ CON 420 – Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 – Process Control & Auditing (3) ○ BTS 300 – Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 – Automated Devices (3) ○ AEM 371 – Hydraulics & Pneumatics (3) ○ AEM 407 – Fundamentals of Project Management (3) ○ AEM 408 – Human Resource Development (3) ○ AEM 499 – Manufacturing Senior Project (3) ○ AEM 467 – Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 – College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Automotive Service Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Automobile Service Technology Section A (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Automobile Service Technology Section B (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Automobile Service Technology Section C (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Automobile Service Technology Section D (1)	○ High School Diploma
13-14	○ Quantitative Reasoning (3) ○ Natural Sciences (3) ○ Social/Behavioral Sciences (3) ○ Heritage/Humanities (3) ○ Written Communications (3) ○ Digital Literacy (0-3)	○ ADX 120/121 – Basic Automotive Electricity & Lab (5) ○ ADX 150/151 – Engine Repair & Lab (5) ○ ADX 170/171 – Climate Control & Lab (4) ○ ADX 260/261 – Electrical Systems & Lab (5) ○ AUT 110/111 – Brake Systems & Lab (5) ○ AUT 130/131 – Manual Transmissions & Lab (5) ○ AUT 140/141 – Basic Fuel & Ignition Systems & Lab (5) ○ AUT 142/143 – Emission Systems & Lab (5) ○ AUT 160/161 – Suspension & Steering & Lab (5) ○ AUT 180/181 – Automatic Transmission/Transaxle & Lab (5) ○ AUT 240/241 – Computer Control Systems & Diagnosis & Lab (5) ○ ISX 100 – Industrial Safety (3) ○ TQX 110 – Total Quality Management (3) ○ B&E 100 – Introduction to Business and Economics (1) ○ TEC 100 – Communication for Business and Industry (3) **OR** CMS 152 – Writing for Business and Industry (3) ○ ACT 101 – Fundamentals of Accounting I (3) ○ Work Experience Component (1)	○ KCTCS Automotive Electrician Certificate ○ KCTCS Engine Repair Certificate ○ KCTCS Automotive A/C Mechanic Certificate ○ KCTCS Brake Repairer Certificate ○ KCTCS Front End Mechanic Certificate ○ KCTCS Manual Transmission/Drive Train Technician Certificate ○ KCTCS Automatic Transmission/ Transaxle Technician Certificate ○ KCTCS Tune-up Mechanic Certificate ○ KCTCS Automotive Technician Diploma and Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Bricklayer Assistant

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introductory Masonry (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Intermediate Masonry (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Industrial Safety (.5) ○ Basic Blueprint Reading (.5)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Co-op or Internship (1)	○ High School Diploma
13-14	○ Written Communications (3) **OR** Oral Communications (3) **OR** Heritage/Humanities (3) ○ Social/Behavioral Sciences (3) **OR** Natural Sciences (3) **OR** Quantitative Reasoning (3) ○ Digital Literacy (0-3)	○ BRX 220 – Blueprint Reading for Construction (3) ○ ISX 100 – Industrial Safety (3) **OR** ISX 101 – Intro to Industrial Safety (3) ○ MSY 105 – Introductory Masonry (3) ○ MSY 115 – Intermediate Masonry (3) ○ MSY 199 – Cooperative Education (3) **OR** MSY 198 – Practicum (3) ○ MSY 205/215 – Advanced Masonry & Lab (6) ○ MSY 225 – Brick Construction (3) ○ MSY 235 – Special Techniques in Brick Construction (3) ○ MSY 245 – Anchors and Reinforcement (3) ○ MSY 275 – Fireplace Construction (3) ○ MSY 299 – Cooperative Education (3) **OR** MSY 298 – Practicum (3) ○ MSY 291 – Special Problems (3) ○ MSY 253 – Masonry Floors and Steps (3) ○ MSY 257 – Stone (3)	○ KCTCS Bricklayer Helper Certificate ○ KCTCS Bricklayer Trainee Certificate ○ KCTCS Construction Bricklayer Certificate ○ KCTCS Stone Mason Certificate ○ KCTCS Construction Mason Diploma

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Civil Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 – Metallic Material Process (3) ○ TEC 161 – Computer Apps in Tech (3) ○ AEM 195 – Computer Aided Drafting (3) ○ EET 251 – Electricity and Electronics (3) ○ AEM 390 – Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 – Introduction to Quality (3) ○ AEM 301 – Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 – Methods Lean Operation (3) ○ AEM 310W – Computer Communication in Industry (3) ○ AEM 330 – Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 – Cooperative Study in Technology (1) ○ CON 420 – Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 – Process Control & Auditing (3) ○ BTS 300 – Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 – Automated Devices (3) ○ AEM 371 – Hydraulics & Pneumatics (3) ○ AEM 407 – Fundamentals of Project Management (3) ○ AEM 408 – Human Resource Development (3) ○ AEM 499 – Manufacturing Senior Project (3) ○ AEM 467 – Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 – College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Computer Information Technology

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Computer Literacy (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Computational Thinking (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Introduction to Programming (1)	
12	○ English (1) – Aligned with student's ILP ○ Statistics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ AP Computer Science (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ MAT 126 – Technical Algebra & Trigonometry (3) or higher ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3)	○ CIT 105 – Introduction to Computers (3) ○ CIT 111 – Computer Hardware & Software (4) ○ CIT 120 – Computational Thinking (3) ○ CIT 170 – Database Design Fundamentals (3) ○ CIT 180 – Security Fundamentals (3) ○ Approved Level I Networking (4) ○ Approved Level I Programming Language (3) ○ CIT 293 – CIT Employability Studies (1) ○ CIT Technical Electives (21-25) ○ Track 1 course (3) ○ Track 2 course (3) ○ Track 3 course (3) ○ Track 4 course (3) ○ Track 6 course (3-4) ○ Track 7 course (3-4)	○ KCTCS A+ Prep Certificate ○ KCTCS Security Prep + **AND** Computer Technician Certificates ○ KCTCS CIT Fundamentals Certificate ○ Various KCTCS Certificates depending on Track ○ CIT Associate in Applied Science in one CIT Track

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Computerized Manufacturing and Machining

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Fundamentals of Machine Tools-A (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Fundamentals of Machine Tools-B (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Blueprint Reading for Machinists (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Applied Machining I (1) ○ Applied Machining II (1) ○ Manual Programming (1) ○ Introduction to Computer-Aided Drafting (1) ○ Mechanical Blueprint Reading (.5) ○ Metrology/Control Charts (.5) ○ Co-op (Machine Tool) **OR** Internship (Machine Tool) ○ Introduction to 3D Printing Technology (1) ○ Engineering I (1)	○ High School Diploma

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
13-14	○ ENG 101 – Writing I (3) ○ MAT 116 – Technical Mathematics or higher (3) ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Electives (Co-op or Practicum) (1) ○ Digital Literacy (0-3)	○ CMM 100/112 – Fundamentals of Machine Tools A **AND** B (6) **OR** CMM 114 – Fundamentals of Machine Tools (6) ○ CMM 118 – Metrology/Control Charts (2) ○ CMM 120/122 – Applied Machining I **AND** II (6) **OR** CMM 124 – Applied Machining (6) ○ CMM 130/132 – Manual Programming **AND** CAD/CAM/CNC (6) **OR** CMM 134 – Manual Programming/CAD/CAM/CNC (6) **OR** CMM 138 – Intro to Programming & CNC Machines (6) ○ CMM 210/212 – Industrial Machining I **AND** II (6) **OR** CMM 214 – Industrial Machining (6) ○ CMM 220/222 – Advanced Industrial Machining I **AND** II (6) **OR** CMM 224 – Advanced Industrial Machining (6) ○ CMM 2301/2302 – Intro to Conversational Programming (3) **AND** Conversational Editing and Subroutines (3) **OR** CMM 230 – Conversational Programming (6) **OR** CMM 234 – CNC Machines and Coding Practices (6) ○ CMM 2401/2402 – Intro to 3-D Code Sequencing and Tool Path Production **AND** Advanced 3-D Code Sequencing and Micro Systems (6) **OR** CMM 240 – Intro to 3-D Programming (6) **OR** CMM 244 – Advanced Programming/Setup Practices (6) ○ BRX 110/210 – Basic Blueprint Reading for Machinist **AND** Mechanical Blueprint Reading for Machinist (4) **OR** BRX 112 – Blueprint Reading for Machinist (4)	○ KCTCS CNC Machining and Waterjet Technology Certificate ○ KCTCS CNC Operator Certificate ○ KCTCS Exploratory Machining I Certificate ○ KCTCS Machine Tool Operator I Certificate ○ KCTCS Machine Tool Operator II Certificate ○ KCTCS Computerized Manufacturing and Machining Diploma & Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Construction Architectural Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Civil Engineering (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Introduction to Construction Technology (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Ceiling and Roof Framing (1) ○ Floor and Wall Framing (1)	○ High School Diploma
13-14	○ Written Communications (3) ○ MAT 105 – Business Mathematics or Higher Level Quantitative Reasoning ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Oral Communications (3) ○ Digital Literacy (0-3)	○ BRX 220 – Blueprint Reading for Construction (3) ○ CAR 126/127 – Intro to Construction & Lab (4) ○ CAR 140/141 – Surveying and Foundations & Lab (5) ○ CAR 150/151 – Construction Framework & Lab (5) ○ CAR 190/191 – Light Frame Construction I & Lab (5) ○ CAR 196/197 – Light Frame Construction II & Lab (5) ○ CAR 198 – Special Topics in Construction (1-6) ○ CAR 200/201 – Light Frame Construction III & Lab (5) ○ CAR 240/241 – Light Frame Construction IV & Lab (5) ○ CAR 298 – Practicum in Construction (2) **OR** CAR 299 – Co-op in Construction (2-4) ○ ISX 100 – Industrial Safety (3) ○ Technical Electives (10)	○ KCTCS Basic Carpenter Certificate ○ KCTCS Carpenter Helper Certificate ○ KCTCS Construction Forms Helper Certificate ○ KCTCS Residential Carpenter Certificate ○ KCTCS Residential Roofer Certificate ○ KCTCS Residential Site Layout Assistant Certificate ○ KCTCS Rough Carpenter Certificate ○ KCTCS Construction Technology Diploma & Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Culinary Arts

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Foods and Nutrition (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Culinary Arts I (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Culinary Arts II (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Advanced Foods and Nutrition (1)	○ High School Diploma
13-14	○ Quantitative Reasoning (3) ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Written Communication (3) ○ Oral Communications (3) ○ Digital Literacy (0-3)	○ CUL 100 – Intro to Culinary Arts (2) **OR** CUL 105 – Applied Intro to Culinary Arts (2) ○ CUL 250 – Garde Manger (4) ○ CUL 125 – Sanitation and Safety (2) ○ CUL 211 – Basic Food Production (4) ○ CUL 215 – Basic Baking (4) ○ CUL 230 – Basic Nutrition (3) **OR** NFS 101 – Human Nutrition and Wellness (3) ○ CUL 240 – Meats, Seafood and Poultry (4) ○ CUL 270 – Human Relations Management (3) ○ CUL 280 – Cost and Control (3) ○ CUL 285 – Front of House (3) **OR** CUL 290 – Front of House/Catering (4) ○ CUL 220 – Advanced Baking and Pastry Arts (4) ○ BAS 170 – Entrepreneurship (3) **AND** CUL 295 – Doing Business as a Personal Chef (3) **OR** BAS 160 – Intro to Business (3) **AND** BAS 283 – Principles of Management (3) ○ BAS 282 – Principles of Marketing (3) ○ CUL 298 – Culinary Arts Practicum Experience (2-3) **OR** CUL 299 – Culinary Arts Cooperative Education Experience (2-3)	○ KCTCS Food and Beverage Management Certificate ○ KCTCS Advanced Food and Beverage Management Certificate ○ KCTCS Baking Certificate ○ KCTCS Catering Certificate ○ KCTCS Fundamentals of Culinary Arts Certificate ○ KCTCS Culinary Arts Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Diesel Engine/Electrician Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Mechanical Concepts (.5) ○ Preventative Maintenance Lab (.5)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Basic Automotive Electricity (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Electrical Systems for Diesel Equipment (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Introduction to Diesel Engines (1) ○ Diesel Engine Repair (1)	○ High School Diploma
13-14	○ Quantitative Reasoning (3) ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Written Communication (3) ○ Digital Literacy (0-3)	○ BEX 100/101 – Basic Electricity for Non-majors & Lab (5) **OR** ADX 120/121 – Basic Automotive Electricity & Lab (5) **OR** ELT 110 – Circuits I (5) ○ ADX 170/171 – Climate Control & Lab (4) ○ DIT 103 – Preventive Maintenance Lab (2) ○ DIT 110/111 – Intro to Diesel Engines & Lab (5) **OR** ADX 150/151 – Engine Repair & Lab (5) ○ DIT 112/113 – Diesel Engine Repair & Lab (5) ○ DIT 140/141 – Hydraulics & Lab (5) **OR** FPX 100/101 – Power Fluid & Lab (5) ○ DIT 150/151 – Power Trains & Lab (5) ○ DIT 190/191 – Electrical Systems for Diesel Equipment & Lab (5) **OR** ADX 260/261 – Electrical Systems & Lab (5) ○ DIT 180/181 – Brakes & Lab (5) **AND** DIT 160/161 – Steering and Suspension & Lab (5)	○ KCTCS Diesel Engine Mechanic Certificate ○ KCTCS Diesel Mechanic Assistant Certificate ○ KCTCS Medium and Heavy Truck Mechanic Helper Certificate ○ KCTCS Diesel Technology Associate in Applied Science (Medium and Heavy Equipment Track)

Electrical/Electronics Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 – Metallic Material Process (3) ○ TEC 161 – Computer Apps in Tech (3) ○ AEM 195 – Computer Aided Drafting (3) ○ EET 251 – Electricity and Electronics (3) ○ AEM 390 – Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 – Introduction to Quality (3) ○ AEM 301 – Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 – Methods Lean Operation (3) ○ AEM 310W – Computer Communication in Industry (3) ○ AEM 330 – Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 – Cooperative Study in Technology (1) ○ CON 420 – Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 – Process Control & Auditing (3) ○ BTS 300 – Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 – Automated Devices (3) ○ AEM 371 – Hydraulics & Pneumatics (3) ○ AEM 407 – Fundamentals of Project Management (3) ○ AEM 408 – Human Resource Development (3) ○ AEM 499 – Manufacturing Senior Project (3) ○ AEM 467 – Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 – College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Emergency Medical Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Health Science (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Emergency Procedures (.5) ○ Medical Terminology (.5)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Emergency Medical Technician (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ EMS Training (1)	○ High School Diploma

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
13-14	○ ENG 101 – Writing I (3) ○ PSY 110 – General Psychology (3) ○ BIO 135 – Basic Anatomy & Physiology with Lab (4) ○ MAT 110 – Applied Mathematics (3) or higher ○ Heritage/Humanities (3) ○ Oral Communication (3) ○ Digital Literacy (0-3)	○ AHS 115 – Medical Terminology (3) **OR** CLA 131 – Medical Terminology from Greek & Latin (3) ○ FRS 2061* – Emergency Medical Technician (6) **OR** EMS 105* – Emergency Medical Technician (6) ○ EMS 200 – Introduction to Paramedicine (4) ○ EMS 210 – Emergency Pharmacology (3) ○ EMS 211 – Fundamentals Lab (2) ○ EMS 215 – Clinical Experience I (1) ○ EMS 220 – Cardiovascular Emergencies (3) ○ EMS 221 – Cardiac and Trauma Lab (1) ○ EMS 225 – Clinical Experience I (1) ○ EMS 230 – Traumatic Emergencies (4) ○ EMS 231 – Medical Lab (1) ○ EMS 235 – Clinical Experience III (2) ○ EMS 240 – Medical Emergencies I (3) ○ EMS 250 – Medical Emergencies II (3) ○ EMS 260 – Special Populations (3) ○ EMS 270 – EMS Operations (1) ○ EMS 275 – Seminar in Advances Life Support (ALS) (1) ○ EMS 285 – Field Internship & Summation (5-6) *Students are required to hold current unrestricted registration with the National Registry EMT as an EMT to be eligible for the program. Individuals desiring initial certification as an EMT have to be 18 years of age and hold a high school diploma or GED.	○ KCTCS Emergency Medical Services Paramedic Certificate ○ KCTCS Emergency Medical Technician Certificate ○ KCTCS Emergency Medical Services Paramedic Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Engineering Design

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 – Metallic Material Process (3) ○ TEC 161 – Computer Apps in Tech (3) ○ AEM 195 – Computer Aided Drafting (3) ○ EET 251 – Electricity and Electronics (3) ○ AEM 390 – Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 – Introduction to Quality (3) ○ AEM 301 – Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 – Methods Lean Operation (3) ○ AEM 310W – Computer Communication in Industry (3) ○ AEM 330 – Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 – Cooperative Study in Technology (1) ○ CON 420 – Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 – Process Control & Auditing (3) ○ BTS 300 – Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 – Automated Devices (3) ○ AEM 371 – Hydraulics & Pneumatics (3) ○ AEM 407 – Fundamentals of Project Management (3) ○ AEM 408 – Human Resource Development (3) ○ AEM 499 – Manufacturing Senior Project (3) ○ AEM 467 – Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 – College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Environmental Control System Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Refrigeration Fundamentals (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ HVAC Electricity (1)	
11	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Electrical Components (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Heating and Humidification (1)	○ High School Diploma
13-14	○ Quantitative Reasoning (3) ○ Natural Sciences (3) ○ Social/Behavioral Sciences (3) ○ Heritage/Humanities (3) ○ Written Communication (3) ○ Oral Communications (3) ○ Digital Literacy (0-3)	○ ACR 100/101 – Refrigeration Fundamentals & Lab (5) ○ ACR 102/103 – HVAC Electricity & Lab (5) **OR** Comparable Electrical Courses (4-5) ○ ACR 130/131 – Electrical Components (5) ○ ACR 170 – Heat Load/Duct Design (3) **OR** ACR 209 – Manual N Commercial Load Calculations and Design (4) ○ ACR 250/251 – Cooling and Dehumidification & Lab (5) ○ ACR 260/262 – Heating and Humidification & Lab (5) ○ ACR 270/271 – Heat Pump Application & Lab (5) **OR** ACR 207 – Commercial HVAC Systems (5) ○ Electives (10-12) ○ ACR 290 – Journeyman Preparation (3) ○ ACR 291 – Special Problems (1) **OR** ACR 298 – Practicum (2)	○ KCTCS Domestic Air Conditioner and Furnace Installer Certificate ○ Environmental Control System Servicer Certificate ○ Environmental System Repair Helper Certificate ○ KCTCS Air Conditioning Technology Diploma & Associate in Applied Science

Flight and Aeronautics

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Aviation Professional Flight (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introduction to Aerospace and Aviation (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Aviation I (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Aviation II (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Commercial Aviation **OR** Aerospace Engineering **OR** Unmanned Aircraft Systems **OR** Aviation Capstone **OR** Engineering Co-op **OR** Engineering Internship (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A ENG 101 Written Communication (3) ○ E-2 MAT 112 Algebra (3) ○ E-1B ENG 102 Written Communication (3) ○ E-4 PHY 101 Concepts of the Physical World (5)	○ AVN 150 – Introduction to Aviation (3) ○ AVN 161 – Private Pilot-SEL: Ground (4) ○ AVN 161A – Private Pilot-SEL: Flight I (1) ○ AVN 162A – Private Pilot-SEL: Flight II (1) ○ AVN 220 – Instrument Pilot: Ground (4) ○ TEC 161 – Computer Systems (3) ○ AVN 221A – Instrument Pilot: Flight I (1)	
14	○ E-1C EES 250 Interpersonal Communications (3) ○ E-5B ECO 230 Principles of Economics (3) ○ E-3B Humanities (3) ○ STA 215 Intro to Statistical Reasoning (3) ○ E-4 Natural Sciences (3)	○ AVN 222A – Instrument Pilot: Flight II (1) ○ AVN 305 – Multi-Engine Pilot: Ground (1) ○ AVN 315 – Aviation Safety Programs (3) ○ AVN 300 – Commercial Pilot: Ground (2) ○ AVN 305A – Private Pilot Multi-Engine: Flight (1) ○ AVN 330 – Crew Resource Management (3) ○ AVN 335 – Weather Reporting/Analysis (3) ○ AVN 301A – Commercial Pilot: Flight I (1)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ MGT 301 Principles of Management (3) ○ E-3A Arts (3) ○ E-6A Diversity of Perspective (3) ○ E-6B Diversity of Perspective (3) ○ BTS 300 Bus & Tech Seminar (0)	○ AVN 302A – Commercial Pilot: Flight II (1) ○ AVN 325 – Aircraft Systems (3) ○ AVN 329W – Aviation Human Factors (3) ○ AVN 303A – Commercial Pilot: Flight III (1) ○ AVN 350 – Air Transportation (3) ○ AVN 415 – Instructor Pilot-SEL: Ground (3) ○ AVN 425 – Applied Aerodynamics (3) ○ AVN 480 – Glass Cockpit Technologies (1) ○ AVN 304A – Commercial Pilot: Flight IV (1)	
16	○ E-5A Historical Perspective (3) ○ Elective (3)	○ AVN 340 – Airport Operations and Security (3) ○ AVN 390 – Aviation Decision Making (3) ○ AVN 402 – Corporate and Business Aviation (3) ○ AVN 410 – Air Traffic Control (3) ○ AVN 435 – Turbine Aircraft Systems (3) ○ AVN 370 – Aviation Leadership (3) ○ AVN 401 – Airline Management (3) ○ AVN 460 – Aviation Legislation (3) ○ AVN 467 – Aviation Exit Exam (0) ○ BTS 400 – Bus & Tech Seminar (0)	○ Aviation B.S. Degree Professional Flight Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Financial Services

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Financial Services I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Accounting and Finance Foundations (1)	
11	○ English (1) – Aligned with student's ILP ○ Personal Finance (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Financial Services II (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Introduction to Finance (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ MAT 105 – Business Mathematics (3) **OR** MAT 100 – Applied Mathematics (3) or Higher Level Quantitative Reasoning ○ Heritage/Humanities (3) ○ Oral Communications (3) ○ Natural Sciences (3) ○ Social/Behavioral Sciences (3) ○ Digital Literacy (0-3)	○ OST 105 – Introduction to Information Systems (3) ○ OST 110 – Document Formatting and Word Processing (3) ○ OST 160 – Records and Database Management (3) ○ OST 210 – Advanced Word Processing Application (3) ○ OST 215 – Office Procedures (3) ○ OST 235 – Business Communications Technology (3) ○ OST 240 – Software Integration (3) ○ OST 275 – Office Management (3) ○ ACT 101 – Fundamentals of Accounting I (3) or Higher Level Accounting ○ ACT 102 – Fundamentals of Accounting II (3) or Higher Level Accounting ○ ACT 279 – Computerized Accounting Systems (3) ○ OST 295 – Administrative Office Technology Internship (3) **OR** COE 199 – Cooperative Education (3) ○ OST 112 – Financial Management (3) ○ BAS 160 – Intro to Business (3)	○ KCTCS Data Entry Operator Certificate ○ KCTCS Financial Assistant Clerk Certificate ○ KCTCS Financial Assistant Trainee Certificate ○ KCTCS Financial Record Keeper Certificate ○ KCTCS Integrated Office Skills Certificate ○ KCTCS Receptionist Certificate ○ KCTCS Administrative Office Technology Associate in Applied Science

Heavy Equipment Sciences

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Intro to Construction Technology (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Heavy Highway Construction Equipment Repair (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Heavy Equipment Operation (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Basic Troubleshooting (1)	○ High School Diploma
13-14	○ Written Communications (3) **OR** Oral Communications (3) **OR** Heritage/Humanities (3) ○ Social/Behavioral Sciences (3) **OR** Natural Sciences (3) **OR** Quantitative Reasoning (3) ○ Digital Literacy (0-3)	○ ISX 100 – Industrial Safety (3) ○ DIT 103 – Preventive Maintenance Lab (2) ○ HEO 151 – Heavy Equipment Operating I (6) ○ HEO 201 – Heavy Equipment Operating II (6) ○ HEO 251 – Heavy Equipment Operating III (6) ○ HEO 125 – Special Problems I (3) ○ HEO 225 – Special Problems II (3) ○ HEO 110 – Power Shovel Backhoe Operator (7) ○ HEO 111 – Bulldozer Operator (7) ○ HEO 107 – Utility Tractor Loader Operator (7)	○ KCTCS Backhoe Operator Certificate ○ KCTCS Bulldozer Operator Certificate ○ KCTCS Front End Loader Operator Certificate ○ KCTCS Operating Engineer Diploma

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Industrial Electrician Assistant

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Electrical Construction 1 (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Circuits 1 (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Electrical Motor Controls (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Rotating Machinery Electrical Motor Controls (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ MAT 116 – Technical Mathematics or Higher Level Quantitative Reasoning ○ Social/Behavioral Science (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Oral Communication (3)	○ ELT 110 – Circuits I (5) **OR** EET 119 – Basic Electricity (5) ○ Approved courses from specific track technical elective list (4-5) ○ EET 250 – National Electric Code (4) ○ EET 264/265 – Rotating Machinery & Lab (4) **AND** EET 270/271 – Electrical Motor Controls I & Lab (4) **OR** EET 268/269 – Rotating Machinery and Electrical Control Motors I & Lab (7) **OR** EET 266/267 – Rotating Machinery and Transformers & Lab (6) ○ EET 127 – Electrical Capstone (1) ○ EET 154/155 – Electrical Construction I & Lab (4) ○ EET 252/253 – Electrical Construction II & Lab (4) **OR** EET 254/255 – Electrical Construction & Lab (7) ○ EET 150/151 – Transformers & Lab (3) ○ Technical Electives (9)	○ KCTCS Electrical Construction Certificate ○ KCTCS Electrical Motor Control Level I Certificate ○ KCTCS Electrician Trainee Level I Certificate ○ KCTCS Electrician Trainee Level II Certificate ○ KCTCS Residential Electricity Level I Certificate ○ KCTCS Residential Electricity Level II Certificate ○ KCTCS MIT: Electrical Technology Associate in Applied Science

Interdisciplinary Early Childhood Education

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Early Lifespan Development (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Child Development Services I (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Child Development Services II (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Principles of Teaching (1)	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ HIS 108 – History of the U.S. Through 1865 (3) **OR** HIS 109 – History of the U.S. Since 1865 (3) ○ ENG 101 – Writing I (3) ○ MAT 105 – Business Mathematics (3) or higher ○ PHY 171 – Applied Physics (4) ○ PSY 110 – General Psychology (3) ○ ENG 102 – Writing II (3)	○ CIT 105 – Introduction to Computers (3) ○ IEC 101 – Orientation to Early Childhood Education (3) ○ IEC 102 – Foundations of Early Childhood Education (3) ○ IEC 130 – Early Childhood Development (3) ○ IEC 170 – Observation & Assessment (3) ○ IEC 200 – Child Guidance (3) ○ IEC XXX – Technical Support Elective Course 1 (3) ○ IEC XXX – Technical Support Elective Course 2 (3) ○ IEC 180 – Approaches to Early Childhood Education Curriculum (3) ○ IEC 216 – Literacy & Language in IECE (3) ○ IEC 221 – Creative Expressions in IECE (3) ○ IEC 246 – Sciences & Mathematics for IEC (3) ○ IEC 235 – Introduction to Inclusive Education (3) ○ IEC 291 – IECE Practicum/Cooperative Education (3)	○ KCTCS KY Childcare Provider Cert ○ KCTCS Child Care Assistant Cert. ○ KCTCS Interdisciplinary Early Childhood Education AAS KCTCS Certificates available depending on the courses selected.

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Law Enforcement Services

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introduction to Criminal Justice (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Law Enforcement (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Health and Well-Being for Law Enforcement (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Criminal Investigation (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ ENG 102 – Writing II (3) ○ COM 181 – Basic Public Speaking (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ Quantitative Reasoning (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ POL 101 – American Government (3) **OR** POL 255 – State Government (3) ○ PSY 110 – General Psychology (3) ○ SOC 101 – Intro to Sociology (3) ○ Digital Literacy (0-3) ○ Elective Courses (Gen Ed or Technical) (6)	○ CRJ 100 – Intro to Criminal Justice (3) ○ CRJ 202 – Issues in Ethics in Criminal Justice (3) ○ CRJ 204 – Criminal Investigations (3) ○ CRJ 215 – Intro Law Enforcement (3) ○ CRJ 216 – Criminal Law (3) ○ CRJ 217 – Criminal Procedures (3) ○ CRJ 295 – Criminal Justice Capstone (1) ○ CRJ 108 – Advanced Firearms and Less Than Lethal Weapons (4) ○ CRJ 201 – Intro to Criminalistics (3) ○ CRJ 208 – Delinquency and the Juvenile Justice System (3) ○ CRJ 211 – Liability and Legal Issues (3) ○ CRJ 218 – Police Supervision (3)	○ KCTCS Criminal Justice Certificate ○ KCTCS Law Enforcement Certificate ○ KCTCS Criminal Justice Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Maintenance Mechanic

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Industrial Maintenance Electrical Principles (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Industrial Maintenance Electrical Motor Controls (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Industrial Maintenance of PLCs (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Maintaining Industrial Equipment (1)	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ HIS 108 – History of the U.S. Through 1865 (3) **OR** HIS 109 – History of the U.S. Since 1865 (3) ○ ENG 101 – Writing I (3) ○ MAT 116 – Technical Math (3) or higher ○ PHY 171 – Applied Physics (4) ○ POL 101 – American Government (3) **OR** PSY 110 – General Psychology (3)	○ FPX 100/101 – Fluid Power & Lab (5) ○ IMT 110/111 – Industrial Maintenance Electrical Principles & Lab (5) ○ IMT 150/151 – Maintaining Industrial Equipment & Lab (5) ○ BRX 120 – Basic Blueprint Reading (3) ○ IMT 100/101 – Welding for Maintenance & Lab (5) ○ CMM 114 – Fundamentals of Machine Tools (6) ○ IMT 220/221 – Industrial Maintenance Electrical Motor Controls I & Lab (5) ○ IMT 280/281 – Advanced Programmable Logic Controllers & Lab (5) ○ IMT 200 – Industrial Robotic & Robotic Maintenance (4) ○ MST 200/201 – Advanced Hydraulic Systems & Lab (5) ○ Digital Literacy Requirement (0-3) ○ IMT 289 – Industrial Maintenance Technology Capstone (1)	○ KCTCS Industrial Maintenance Mechanic Level I Certificate ○ KCTCS Ind. Maintenance Mechanic Level II Certificate and ○ KCTCS ○ Ind. Maintenance Machinists Mechanic Certificate ○ KCTCS Industrial Maintenance Robotic Technician Certificate ○ KCTC Fluid Power Mechanic Certificate ○ KCTCS Industrial Maintenance Technician Diploma ○ KCTCS Industrial Maintenance Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Mechanical Engineering

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: Eastern Kentucky University
Secondary School:
Postsecondary Degree: Engineering Tech. Management (B.S.)

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Engineering I (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Engineering II (1)	
11	○ English (1) ○ Algebra II (1) ○ Science (1) ○ Social Studies (1)	○ Engineering Specialization Course aligned to Engineering Career Pathway (1)	
12	○ English (1) ○ English (1) ○ Personal Finance (1) ○ Electives (2)	○ Engineering Capstone **OR** Engineering Co-op **OR** Engineering Internship **OR** Principles of Career and Technical Education **OR** AP Computer Science A **OR** AP Computer Science Principles **OR** Computational Thinking (1)	○ High School Diploma ○ KWIB Approved Industry Certification(s)
13	○ BTO 100 Orientation (1) ○ E-1A Written Communication (3) ○ E-2 MAT 120 Trigonometry (3) ○ E-4 CHEM 101/101L Chemistry/Lab (4) ○ E-1B Written Communication (3) ○ E-1C Oral Communication (3)	○ AEM 201 Metallic Material Process (3) ○ TEC 161 Computer Apps in Tech (3) ○ AEM 195 Computer Aided Drafting (3) ○ EET 251 Electricity and Electronics (3) ○ AEM 390 Advanced Computer-Aided Design (3)	
14	○ E-5B ECO 230 Principles of Economics (3) ○ E-4 PHY 131 College Physics (5) ○ STA 215 Elementary Probability & Stats (3) ○ Elective (3) ○ MAT 211 Applied Calculus (3) ○ E-5A Historical Perspectives (3)	○ AEM 202 Introduction to Quality (3) ○ AEM 301 Non-Metallic Materials Processes (3) ○ AEM Tech Elective (3)	

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
15	○ E-3A Arts (3) ○ E-3B Humanities (3) ○ Elective (3)	○ AEM 308 Methods Lean Operation (3) ○ AEM 310W Computer Communication in Industry (3) ○ AEM 330 Materials Testing and Metrology (3) ○ AEM Tech Elective (3) ○ AEM 349 Cooperative Study in Technology (1) ○ CON 420 Engineering Economy (3) ○ AEM Tech Elective (3) ○ AEM 332 Process Control & Auditing (3) ○ BTS 300 Professional Skills Seminar (0)	
16	○ E-6 Diversity of Perspectives & Exp. (3) ○ Elective (4) ○ E-6 Diversity of Perspectives & Exp. (3)	○ AEM 352 Automated Devices (3) ○ AEM 371 Hydraulics & Pneumatics (3) ○ AEM 407 Fundamentals of Project Management (3) ○ AEM 408 Human Resource Development (3) ○ AEM 499 Manufacturing Senior Project (3) ○ AEM 467 Comp. Exam (0) ○ AEM Tech Elective (3) ○ BTS 400 College to Career Seminar (0)	○ Engineering Technology Management B.S. Degree Manufacturing Concentration

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Quick Navigation Page

Medical Administrative Assisting

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Health Science (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Emergency Procedures (.5) ○ Medical Terminology (.5)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Medical Office Procedures (1)	
12	○ English (1) – Aligned with student's ILP ○ Medical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Internship: Medical Administrative Assistant (1)	○ High School Diploma
13-14	○ MAT 105 – Mathematics for Business (3) **OR** MAT 110 – Applied Mathematics (3) **OR** Higher Level Quantitative Reasoning ○ BIO 135 – Basic Anatomy and Physiology with Lab (4) **OR** BIO 137 – Human Anatomy & Physiology I (4) **AND** BIO 139 – Human Anatomy & Physiology II (4) ○ PSY 110 – General Psychology (3) ○ ENG 101 – Writing I (3) ○ Heritage/Humanities (3)	○ MAI 105 – Introduction to Medical Assisting (3) ○ MAI 120 – Medical Assisting Lab Techniques I (3) ○ MAI 140 – Medical Assisting Clinical Procedures I (4) ○ MAI 150 – Medical Assisting Administrative Procedures I (3) **OR** MIT 217 – Medical Office Procedures (3) ○ MAI 170 – Dosage Calculations (2) ○ MAI 200 – Pathophysiology for the Medical Assistant (3) ○ MAI 220 – Medical Assisting Lab Techniques II (3) ○ MAI 230 – Medical Insurance (3) **OR** MIT 104 – Introduction to Medical Insurance (3) ○ MAI 240 – Medical Assisting Clinical Procedures II (4) ○ MAI 250 – Medical Assisting Administrative Procedures II (3) **OR** MIT 227 – Medical Office Software (3) ○ MAI 270 – Pharmacology for the Medical Assistant (3) ○ MAI 289 – Medical Assisting Assessment Preparation (1-2) ○ MAI 281 – Medical Assisting Practicum (1) ○ MAI 284 – Medical Assisting Externship (2-3) ○ AHS 115 – Medical Terminology (3) ○ CPR 100 – CPR for Healthcare Professionals (1)	○ KCTCS Electrocardiograph Technician Certificate ○ KCTCS Medical Office Administrative Assistant Certificate ○ KCTCS Medical Office Insurance Billing and Coding Certificate ○ KCTCS Medical Assisting Diploma and Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Pharmacy Technician

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Health Science (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Emergency Procedures (.5) ○ Medical Terminology (.5)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Anatomy (1) – Aligned with student's ILP Social Studies (1) – Aligned with student's ILP	○ Pharmacy Technician	
12	○ English (1) – Aligned with student's ILP ○ Medical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Pharmacological and Other Therapeutic Modalities	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ BIO 135 – Basic Anatomy & Physiology with Lab (4)	○ CIT 105 – Intro to Computers (3) ○ MIT 103 – Medical Office Terminology (3) **OR** AHS 115 – Medical Terminology (3) **OR** CLA 131 – Medical Terminology from Greek & Latin (3) ○ PHA 110 – Pharmacy Procedures & Skills (6) ○ PHA 145 – Pharmaceutical Calculators (3) ○ PHA 136 – Pharmacology (3) ○ PHA 150 – Pharmacy Experience (3) ○ PHA 200 – Admixtures for IV Therapy (3) ○ PHA 205 – Admixture Preparations (1) ○ PHA 236 Pharmacology II (3) ○ PHA 240 Pharmacy Technology Career Planning (3) ○ PHA 250 Pharmacy Experience II (3) ○ CPR 100 CPR for Professionals (0-3)	○ KWIB Approved Industry Certification(s) ○ KCTCS Entry Level Pharmacy Technology Certificate ○ KCTCS Advanced Level Pharmacy Technology Diploma

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

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Plant Science Systems

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Agricultural Science and Technology (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Agriscience (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Introduction to Greenhouse and Crop Production (1)	
12	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Landscape and Turf Management (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ ENG 102 – Writing II (3) ○ COM 181 – Basic Public Speaking (3) ○ MAT 110 – Applied Mathematics or higher (3) ○ AGR 101 – The Economics of Food and Agriculture (3) ○ Heritage/Humanities (3) ○ BIO 112/113 – Intro to Biology & Lab (4) **OR** BIO 114/115 – Biology I & Lab (4) **OR** BIO 116/117 – Biology II & Lab (4) **OR** BIO 143 – Zoology & Lab (4) **OR** BIO 141 – Botany & Lab (4) **OR** BIO 150/151 – Principles of Biology I & Lab (5) ○ CHE 130/135 – Intro General & Biological Chemistry & Lab (4) **OR** CHE 140/145 – Intro to General Chemistry & Lab (4) **OR** CHE 170/175 – General College Chemistry I & Lab (4) ○ Digital Literacy (3)	○ AGR 125 – Intro to Fertilizer & Soils (3) ○ AGR 130 – Field Application in Agriculture (2) ○ AGR 140 – Issues in Agriculture (3) ○ AGR 230 – Career Development in Agriculture (3) ○ AGR 240 – Animal Science (3) ○ AGR 250 – Introduction to Plants/Crop Production (3) ○ AGR 160 – Horticulture Science (3) ○ AGR 180 – Agricultural Internship (2) ○ HRT 110 – Nursery Management (4) ○ HRT 210 – Landscape Design (4) **OR** HRT 240 – Greenhouse Management (4) ○ Electives (1)	○ KCTCS Horticulture Certificate ○ KCTCS Horticulture Diploma & Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

Plumber Assistant

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Introduction to Plumbing (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Basic Plumbing Skills (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Plumbing Systems (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Bathroom Install (1) ○ Kitchen Install (1)	○ High School Diploma

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
13-14	○ ENG 101 – Writing I (3) ○ Quantitative Reasoning (3) ○ Social/Behavioral Sciences (3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) ○ Oral Communications (3) ○ Digital Literacy (0-3)	○ PLB 150 – Plumbing, Introduction to the Trade (3) **AND** PLB 151 – Basic Plumbing Skills (3) **OR** PLB 100 – Basic Theory of Plumbing (3) **AND** PLB 105 – Plumbing Principles (3) ○ PLB 160 – Plumbing Systems, DWV and Water (3) ○ PLB 161 – Rough-In of Plumbing Fixtures (2) ○ PLB 250 – Plumbing Appliances and Fixtures (3) ○ PLB 251 – Pumps and Water Heaters (2) ○ PLB 260 – Service (2) **AND** PLB 261 – Advanced Plumbing Lab (2) **OR** PLB 265 – Valve and Faucet Repairs (1) **AND** PLB 267 – Water Heater Service & Replacement (1) **AND** PLB 269 – Sewer & Drain Cleaning (1) ○ PLB 262 – Back Flow Prevention (3) ○ PLB 270 – License Preparation for Journeyman Exam (3) ○ PLB 298 – Plumbing Practicum/Repairs & Maintenance (4) **OR** PLB 299 – Plumbing Cooperative Education (4) ○ BRX 220 – Blueprint Reading for Construction (3) ○ BAS 120 – Personal Finance (3) **OR** EFM 100 – Personal Financial Management (3) ○ WPP 200 – Workplace Principles (3) **OR** BAS 250 – Business Employability Seminar (1) ○ ISX 101 – Into to Industrial Safety (3) **OR** ISX 100 – Industrial Safety (3) ○ PLB 115 – Plumbing Applications (4)	○ KCTCS 1st Year Plumber Certificate ○ KCTCS 2nd Year Plumber Certificate ○ KCTCS Certified Backflow Tester Certificate ○ KCTCS Finish Plumber Certificate ○ KCTCS Maintenance Plumber Certificate ○ KCTCS Plumber's Helper Certificate ○ KCTCS Rough Plumber Certificate ○ KCTCS Plumber Estimator Certificate ○ KCTCS Service and Repair Plumber Certificate ○ KCTCS Plumbing Technology Diploma and Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

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Pre-Nursing

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Principles of Health Science (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Emergency Procedures (.5) ○ Medical Terminology (.5)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Medicaid Nurse Aide (1)	
12	○ English (1) – Aligned with student's ILP ○ Medical Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Body Structures and Functions (1)	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ BIO 137 – Human Anatomy & Physiology I (4) ○ HIS 108 – History of the U.S. Through 1865 (3) **OR** HIS 109 – History of the U.S. Since 1865 (3) ○ ENG 101 – Writing I (3) ○ MAT 105 – Business Mathematics (3) or higher ○ BIO 139 Human Anatomy & Physiology II (4) ○ PSY 110 – General Psychology (3) ○ BIO 225 – Medical Microbiology (4)	○ NAA 100 – Nursing Assistant Skills (0-3) ○ CPR 100 – CPR for Healthcare Professionals (0-1) ○ NSG 101 – Nursing Practice I (9) (**OR** other courses available) ○ NSG 210 – Medical/Surgical Nursing I (6) ○ NSG 211 – Maternal Newborn Nursing (3) ○ NSG 212 – Behavioral Health Nursing (3) ○ NSG 213 – Pediatric Nursing (3) ○ NSG 215 – Pharmacology I (1) ○ NSG 220 – Medical/Surgical Nursing II (6) ○ NSG 225 – Pharmacology II (1) ○ NSG 230 – Medical/Surgical Nursing III (6)	○ KCTCS Nursing Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

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Teaching and Learning

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ The Learning Community (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ The Learner-Centered Classroom (1)	
11	○ English (1) – Aligned with student's ILP ○ Algebra II (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ The Professional Educator (1)	
12	○ English (1) – Aligned with student's ILP ○ Pre-Calculus (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Principles of Career and Technical Education (1)	○ High School Diploma
13-14	○ ENG 101 – Writing I (3) ○ ENG 102 – Writing II (3) ○ COM 181 – Basic Public Speaking (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ Arts and Humanities 1 (3-4) ○ HIS 108 – History of the United States Through 1865 (3) **OR** HIS 109 – History of the United States Since 1865 (3) ○ MAT 146 – Contemporary College Algebra (3) **OR** MAT 150 – College Algebra (3) **OR** MA 109 – College Algebra (3) **OR** MA 111 – Contemporary Math (3) ○ Natural Sciences II (7) ○ PSY 110 – General Psychology (3) ○ Social/Behavioral Sciences I (6) ○ Digital Literacy (0-3)	○ EDU 201 – Intro to American Education (3) ○ EDU 202 – Human Development and Learning (3) ○ EDP 203 – Teaching Exceptional Learners in Regular Classrooms (3) **OR** EDP 260 – Motivation and Classroom Management (3) ○ Technical or Support Electives (15)	○ KCTCS Education Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

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Welder Entry Level

Secondary-Postsecondary Pathway Alignment

Postsecondary Institution: KCTCS (Institutions TBD)
Secondary School:
Dual Credit Hours:

Grade	General Education	Technical Core	Diploma, Certification(s), Certificate(s), Degree(s)
9	○ English I (1) ○ Algebra I (1) ○ Science (1) ○ Social Studies (1) ○ Physical Education (.5) ○ Health (.5)	○ Oxy-fuel Systems (1)	
10	○ English II (1) ○ Geometry (1) ○ Science (1) ○ Social Studies (1) ○ Visual and Performing Arts (1)	○ Shielded Metal Arc Welding (1)	
11	○ English (1) – Aligned with student's ILP ○ Technical Mathematics (1) – Aligned with student's ILP ○ Science (1) – Aligned with student's ILP ○ Social Studies (1) – Aligned with student's ILP	○ Gas Metal Arc Welding (1)	
12	○ English (1) – Aligned with student's ILP ○ Mathematics (1) – Aligned with student's ILP ○ Electives (2) – Aligned with student's ILP	○ Gas Tungsten Arc Welding (1)	○ High School Diploma
13-14	○ COM 181 – Oral Communications (3) **OR** COM 252 – Intro to Interpersonal Communications (3) ○ HIS 108 – History of the U.S. Through 1865 (3) **OR** HIS 109 – History of the U.S. Since 1865 ○ ENG 101 – Writing I (3) ○ MAT 110 – Applied Mathematics (3) or higher ○ PHY 171 – Applied Physics (4) ○ PSY 110 – General Psychology (3) **OR** SOC 101 – Introduction to Sociology (3) ○ Digital Literacy (0-3) ○ Heritage/Humanities (3) ○ Natural Sciences (3) **OR** Introductory Physics I & Lab (4)	○ WLD 100/101 – Oxy-Fuel Systems & Lab (4) ○ WLD 110/111 – Cutting Processes & Lab (5) ○ WLD 120/121 – Shielded Metal Arc Welding & Lab (5) ○ WLD 123 – Shielded Metal Arc Welding Groove with Backing Lab (3) **OR** WLD 225 – Shielded Metal Arc Welding Open Groove Lab (3) ○ WLD 140/141 – Gas Metal Arc Welding & Lab (5) ○ WLD 143 – Gas Metal Arc Welding Groove Lab (3) ○ WLD 130/131 – Gas Tungsten Arc Welding & Lab (5) ○ WLD 133 – Gas Tungsten Arc Welding Groove Lab (3) ○ WLD 170/171 – Blueprint Reading for Welding & Lab (5) ○ Elective (3) ○ WLD 220/221 –Welding Certification & Lab (5) ○ WLD 298 – Welding Practicum (1-4) **OR** WLD 299 – Cooperative Work Experience	○ KCTCS Gas Welder Certificate KCTCS ARC Cutter Certificate ○ KCTCS Welder Helper Certificate ○ KCTCS Production Line Welder Certificate ○ KCTCS Combination Welder Diploma ○ KCTCS Welding Technology Associate in Applied Science

Note: These are model pathways. Each high school will have to develop their own pathway based on the college's dual credit course offerings.

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