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Career Pathways/Course Descriptions

WE ARE YOUR GUIDE

Administrative and Support Staff

Pamela Todd, Principal

Crystal Farmer, Administrative Assistant

Lauren Wood, School Counselor

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Instructional Staff

Eric Anderson, Industrial Manufacturing Technology

Willis Holmes, Computer Science

Ashley Brown, Health Science

Samantha Gallimore, Health Science

Adam O'Rear, Automotive

Jamie Scott, Engineering

Sonya Shockley, Business & Marketing Education

Hopkins County Career & Technology Center

Pathways to Success Through Learning That Works

1775 Patriot Drive

Madisonville, KY 42431

270-825-8998

Dear Student:

Welcome to **The Hopkins County Career & Technology Center (HCCTC)**. It is an honor to serve as your principal. I and my professional staff are pleased that you have chosen the HCCTC to help you further your education. Your future is important to all of us: your family, this community, and the HCCTC. We at the HCCTC are obligated to help you identify your interests and talents so that together we can help you reach your career objectives.

The HCCTC offers opportunities for students through rigorous engaging curricula, project-based learning, real-world learning experiences, and career guidance. Whether your post-secondary plans include going to college or entering the workforce, attending the HCCTC can provide the opportunities that will turn those plans into reality.

The faculty and staff have high expectations for all HCCTC students and therefore challenge them to exercise critical-thinking and team-building skills, set and pursue career goals, practice personal effectiveness skills, and network with community partners. We also encourage students to take advantage of the many dual credit courses and industry certificates offered at the HCCTC. We challenge you to be involved in leadership roles such as: HCCTC ambassadors, organization officers, organization competitors, co-op students, and mentorship participants.

Together, we will work to ensure you are prepared for the career of your choice.

Sincerely,

Pamela Hight Todd
Principal, Hopkins County Career & Technology Center

#WeAreCTC

MISSION STATEMENT:

To provide students with challenging academic, technical, and workplace readiness skills in a supportive, engaging, and respectful environment which guides them along a pathway to success.

VISION:

Pathways to Success Through Learning that Works

VALUES:

The faculty and staff at the HCCTC work to provide a safe environment where students are empowered to think critically, make informed decisions, become leaders, and excel in the preparation of their chosen career. Expectations and rules are important for a school to maintain order. HCCTC abides by all district rules, and students are held accountable for their individual actions. Policies, procedures, and expectations are in place to ensure a safe educational environment for all students, faculty, and staff. HCCTC students are expected to be productive participants in their educational journey and abide by all school protocols.

GOALS:

1. Provide a safe, challenging, and supportive educational environment that enables students to develop workplace behaviors, teamwork skills, and quality workmanship.
2. Provide a curriculum that emphasizes the application and integration of rigorous academics, 21st century technology, and current industry standards and skills.
3. Provide educational pathways which guide students in a logical order as they seek to reach their career goal.
4. Provide students with the tools necessary to continue their education in a related post-secondary institution and/or high demand, high wage occupation.
5. Provide opportunities to develop leadership traits through participation in career and technical education student organizations.
6. Provide student assessments that validate student learning which will indicate college/career readiness.
7. Provide opportunities to engage in partnerships with employers, community organizations, educational institutions, and government to stay abreast of current workforce needs and trends.

WHAT IS DUAL CREDIT?

Courses where students earn high school and college credit simultaneously.

WHY TAKE DUAL CREDIT?

Key findings from research that support accelerating your learning through dual credit classes:

1. Perhaps the biggest benefit of dual credit is that students may start accumulating college credits. A student earning dual credit leaves high school already having begun their post-secondary degree, leading to reduced college costs and eliminating duplication of effort for highly capable students.
    - **Students are better prepared for college.** Dual-credit courses will enable you to start college knowing what to expect in terms of academics. As a first year College student, you will likely feel more confident as you take first-semester courses, since you'll have already experienced what it is like to take a college class. Additionally, students who participate in dual-credit programs learn about the administrative processes of taking college courses. You will be able to navigate registration, enrollment, and payments before you set foot on campus.
    - **Students can save money.** With the reduced tuition rate, students can knock out a chunk of their future requirements or electives for a fraction of the cost. A dual-credit program:
        - ✓ reduces the amount of time it takes to graduate,
        - ✓ allows students to take fewer credit-hours per semester and give them time to take advantage of opportunities like study abroad, which may not otherwise have fit into their schedule.
        - ✓ earns more KEES money because dual credit courses are weighted.
2. Earning college credits while in high school increases the likelihood that a student will complete high school and persist in college.
3. All public colleges and universities in Kentucky are required to accept credits from each other. Dual credit courses should transfer within Kentucky. Be advised to always check.
4. **There is no single exam or extra test.** One of the major hallmarks of dual credit is that, upon completing the same assignments and assessments as a university student, college credit is awarded. There's no extra test to qualify for credit; students are experiencing the same class that students take on campus and earning actual college credit.

General guidelines to receive dual credit:

- Students must enroll as a KCTCS student in the course in which they wish to receive credit. The eligible dual credit course list is available in the office.
- **DUAL CREDIT EXPENSE BREAKDOWN:**
    - Unless a student is participating in the KY Dual Credit Scholarship, they will be required to pay tuition for the course at a reduced tuition rate.
    - CURRENT STUDENT TUITION IS ROUGHLY 50% THE COST OF REGULAR TUITION.

CTC Dual Credit Course Offerings

High School Course Name	Credits	Madisonville Community College Course Title
AUTOMOTIVE		
Automotive Maintenance and Light Repair A	5	ADX 150 Engine Repair and ADX 151 Lab
Automotive Maintenance and Light Repair C	5	AUT 160 Steering and Suspension Systems and AUT 161 Lab
COMPUTER SCIENCE		
Computer Hardware and Software	4	CIT 111 - Computer Hardware and Software
Introduction to Networking Concepts	4	CIT 160 - Introduction to Networking Concepts
Computational Thinking	3	CIT 120 - Computational Thinking
Security Fundamentals	3	CIT 180 – Security Fundamentals
Game Design & Development	3	CIT 124- Game Design
App Development with Swift	3	CIT 146 - Swift I
ENGINEERING		
Intro to 3D Printing	3	DPT 100- Intro to 3D Printing
Engineering Capstone (Electrical pathway)	1	AIT 1203 - Mechanical Installation
Elect/Electronic Engineering	2	AIT 1001 - Basic Electrical Knowledge
HEALTH SCIENCE		
Principles of Health Science	3	AHS 105-Introduction to Health Occupations
Medical Terminology	3	AHS 115-Medical Terminology
Medicaid Nurse Aide	3	NAA 100-Nurse Assistant Skills I
INDUSTRIAL MANUFACTURING		
Basic Blueprint Reading	3	BRX 120 – Basic Blueprint
Fluid Power	1	AIT 1003- Hydraulic / Pneumatic Fundamentals
Industrial Maintenance Electrical Principles	2	AIT 1001- Basic Electrical Knowledge

BUSINESS

E-COMMERCE
CIP 52.0208.02

PATHWAY DESCRIPTION: 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 principles of business management, and applicable technical and equipment skills.

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

_____ 060112 Digital Literacy***
_____ 080716 Marketing Principles***
_____ 060751 Multimedia Publishing
_____ 060199 Web Page Design

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

_____ 080310 Principles of Entrepreneurship
_____ 080717 Marketing Applications
_____ 081512 Promotional Applications and Media
_____ 080707 Marketing Education Co-op
_____ 060107 Business Education Co-op
_____ 060111 Bus & Marketing Essentials**
_____ 060761 Adv Multimedia Publishing
_____ 080708 Marketing Ed Internship
_____ 060108 Business Ed Internship

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

060751 Multimedia Publishing: Grade 10-12. **Prerequisite- Digital Literacy**. This hands-on course applies publishing and presentation concepts through the development of sophisticated business documents and projects. These documents include, but are not limited to tri-fold brochures, manuscripts, reports, bi-fold programs, catalogs, newsletters, flyers, business forms, graphs, web pages, on-screen presentations, and video productions. Equipment such as scanners, digital cameras, video cameras, and color laser printers, may be utilized in creating documents. Formatting, editing, page layout, and design concepts are taught. Distribution ready publication standards are applied to all projects. Students will develop communication skills, problem-solving techniques, cooperative learning, and interpersonal skills. Leadership development will be provided through FBLA and/or DECA.

060761 Advanced Multimedia Publishing: Grade 10-12. **Prerequisite- Digital Literacy.** This hands-on course applies advanced web design, publishing, and presentation concepts through the development of sophisticated documents and projects which includes, but is not limited to: web sites, web databases, web movies, video editing and production, television productions. The course is designed around the learning goals of the students and is project-based. Students will complete advanced projects agreed upon with the instructor utilizing hardware and software available. Formatting, editing, layout, and design concepts are reviewed and reinforced. Distribution ready publication standards are applied to all projects. Students will develop communication skills, problem-solving techniques, cooperative learning, and interpersonal skills. Leadership development will be provided through FBLA and/or DECA.

080310 Principles of Entrepreneurship: Grade 11-12. **Prerequisite- Marketing Principles.** Principles of Entrepreneurship (Standard) introduces students to a wide array of entrepreneurial concepts and skills, including the role of entrepreneurship in our economy, entrepreneurial discovery processes, ideation, and preliminary start-up venture planning. Students also develop an appreciation for marketing's pivotal role in the development and success of a new business. They become acquainted with channel management, pricing, product/service management, and promotion. Students conduct thorough market planning for

their ventures: selecting target markets; conducting market, SWOT, and competitive analyses; forecasting sales; setting marketing goals and objectives; selecting marketing metrics; and setting a marketing budget. The capstone activity in the course is the development of detailed marketing plans for students' startup businesses. Throughout the course, students are presented ethical dilemmas and problem solving situations for which they must apply academic and critical-thinking skills. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

080717 Marketing Applications: Grade 11-12. **Prerequisite- Marketing Principles**. Marketing Applications furthers student understanding and skills in the various marketing functions. Students coordinate channel management with other marketing activities, discuss the nature of marketing plans, generate product ideas, coordinate activities in the promotional mix, and demonstrate specialized sales processes and techniques. Economic and financial concepts are also stressed throughout the course. Current technology will be used to acquire information and to complete the projects. Throughout the course, students are presented problem- solving situations for which they must apply academic and critical-thinking skills. Formal reflection is an on-going component of the course along with four projects. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

081512 Promotional Applications and Media: Grade 11-12**.** This course is designed to provide students with hands-on applications of running a school-based industry simulated experience. Students will apply basic fundamentals of advertising using digital and print media. This course is based on the business and marketing core that includes communication skills, economics, financial analysis, product and service management, and promotion. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

060199 Web Page Design: Grade 10-12. Students analyze the structure of the world wide web, apply basic principles of web documents and HTML, and develop multimedia web pages. Course content will include the understanding of hypertext and web structures. Equipment such as scanners, digital and video cameras, and sound recording devices will be utilized through hands-on instruction.

060107 Business Education Work Experience Co-op: Grade 12. Cooperative Education for CTE courses provide supervised work site experience related to the student's identified career pathway. A student must be enrolled in an approved capstone course during the same school year that the co-op experience is completed. Students who participate receive a salary for these experiences, in accordance with local, state and federal minimum wage requirements according to the Work Based Learning Guide.

060108 Business Education Internship: Grade 12. Internships for CTE courses provide supervised work-site experience for high school students who are enrolled in a capstone course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information referenced to the Work Based Learning Guide.

MARKETING

CIP 52.1401.01

PATHWAY DESCRIPTION: A program that generally prepares individuals to undertake and manage the process of developing consumer audiences and moving products from producers to consumers. Includes instruction in buyer behavior and dynamics, principle of marketing research, demand analysis,

cost-volume and profit relationships, pricing theory, marketing campaign and strategic planning, market segments, advertising methods, sales operations and management, consumer relations, retailing, and applications to specific products and markets.

Complete (2) TWO CREDITS from the following:

_____ 080716 Marketing Principles***

_____ 080717 Marketing Applications

Complete (2) TWO CREDITS from the following:

_____ 080310 Principles of Entrepreneurship

_____ 080911 Travel & Tourism Marketing

_____ 081512 Promotional Applications and Media

_____ 080707 Marketing Ed Co-op

_____ 080708 Marketing Ed Internship

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

080717 Marketing Applications: Grade 11-12. **Prerequisite- Marketing Principles**. Marketing Applications furthers student understanding and skills in the various marketing functions. Students coordinate channel management with other marketing activities, discuss the nature of marketing plans, generate product ideas, coordinate activities in the promotional mix, and demonstrate specialized sales processes and techniques. Economic and financial concepts are also stressed throughout the course. Current technology will be used to acquire information and to complete the projects. Throughout the course, students are presented problem- solving situations for which they must apply academic and critical-thinking skills. Formal reflection is an on-going component of the course along with four projects. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA

080310 Principles of Entrepreneurship: Grade 11-12. **Prerequisite- Marketing Principles.** Principles of Entrepreneurship (Standard) introduces students to a wide array of entrepreneurial concepts and skills, including the role of entrepreneurship in our economy, entrepreneurial discovery processes, ideation, and preliminary start-up venture planning. Students also develop an appreciation for marketing's pivotal role in the development and success of a new business. They become acquainted with channel management, pricing, product/service management, and promotion. Students conduct thorough market planning for their ventures: selecting target markets; conducting market, SWOT, and competitive analyses; forecasting sales; setting marketing goals and objectives; selecting marketing metrics; and setting a marketing budget. The capstone activity in the course is the development of detailed marketing plans for students' startup businesses. Throughout the course, students are presented ethical dilemmas and problem solving situations for which they must apply academic and critical-thinking skills. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

080911 Travel & Tourism Marketing: This course introduces the student to the travel and tourism industry. This course is based on the Business and Marketing Core that includes communication skills, economics, human resource management, promotion, marketing-information management, and selling. Instruction includes domestic and international travel, sales techniques, transportation methods (road, water, air, and rail), food and beverage marketing, and destination marketing. Leadership development will be provided through DECA and/or FBLA.

081512 Promotional Applications and Media: Grade 11-12**.** This course is designed to provide students with hands-on applications of running a school-based industry simulated experience. Students will apply basic fundamentals of advertising using digital and print media. This course is based on the business and marketing core that includes communication skills, economics, financial analysis, product and service management, and promotion. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

080707 Marketing Education Co-op: Grade 12. Cooperative Education for CTE courses provide supervised work site experience related to the student's identified career pathway. A student must be enrolled in an approved capstone course during the same school year that the co-op experience is completed. Students who participate receive a salary for these experiences, in accordance with local, state and federal minimum wage requirements according to the Work Based Learning Guide.

080708 Marketing Education Internship: Grade 12. Internships for CTE courses provide supervised work-site experience for high school students who are enrolled in a capstone course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information referenced in the Work Based Learning Guide.

HOSPITALITY, TRAVEL, TOURISM, AND RECREATION

CIP 52.1910.00

PATHWAY DESCRIPTION: The Hospitality, Travel, Tourism & Recreation career pathway prepares individuals to provide services in the hospitality and leisure fields. Includes instruction in hospitality operations, customer sales, marketing techniques, and assistance operations and techniques, basic office management, retail sports, recreation equipment and food and beverage services.

Complete (3) THREE CREDITS from the following:

_____ 080716 Marketing Principles***
_____ 080717 Marketing Applications
_____ 080911 Travel & Tourism Marketing

Complete (1) ONE CREDIT from the following:

_____ 080310 Principles of Entrepreneurship
_____ 200441 Foods & Nutrition (in the FCS Department)***
OR _____ 200113 FACS (in the FCS Department) ***
_____ 080707 Marketing Education Co-op (1 – 3 credits)
_____ 080708 Marketing Education Internship (1 credit)

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

080717 Marketing Applications: Grade 11-12. **Prerequisite- Marketing Principles**. Marketing Applications furthers student understanding and skills in the various marketing functions. Students coordinate channel management with other marketing activities, discuss the nature of marketing plans, generate product ideas, coordinate activities in the promotional mix, and demonstrate specialized sales processes and techniques. Economic and financial concepts are also stressed throughout the course. Current technology will be used to acquire information and to complete the projects. Throughout the course, students are presented problem- solving situations for which they must apply academic and critical-thinking skills. Formal reflection is an on-going component of the course along with four projects. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA

080310 Principles of Entrepreneurship: Grade 11-12. **Prerequisite- Marketing Principles.** Principles of Entrepreneurship (Standard) introduces students to a wide array of entrepreneurial concepts and skills, including the role of entrepreneurship in our economy, entrepreneurial discovery processes, ideation, and

preliminary start-up venture planning. Students also develop an appreciation for marketing's pivotal role in the development and success of a new business. They become acquainted with channel management, pricing, product/service management, and promotion. Students conduct thorough market planning for their ventures: selecting target markets; conducting market, SWOT, and competitive analyses; forecasting sales; setting marketing goals and objectives; selecting marketing metrics; and setting a marketing budget. The capstone activity in the course is the development of detailed marketing plans for students' startup businesses. Throughout the course, students are presented ethical dilemmas and problem solving situations for which they must apply academic and critical-thinking skills. Leadership development will be provided through FBLA (Future Business Leaders of America) and/or DECA.

080911 Travel & Tourism Marketing: Grade 10-12. This course introduces the student to the travel and tourism industry. This course is based on the Business and Marketing Core that includes communication skills, economics, human resource management, promotion, marketing-information management, and selling. Instruction includes domestic and international travel, sales techniques, transportation methods (road, water, air, and rail), food and beverage marketing, and destination marketing. Leadership development will be provided through DECA and/or FBLA.

080707 Marketing Education Co-op: Grade 12. Cooperative Education for CTE courses provide supervised work site experience related to the student's identified career pathway. A student must be enrolled in an approved capstone course during the same school year that the co-op experience is completed. Students who participate receive a salary for these experiences, in accordance with local, state and federal minimum wage requirements according to the Work Based Learning Guide.

080708 Marketing Education Internship: Grade 12. Internships for CTE courses provide supervised work-site experience for high school students who are enrolled in a capstone course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information referenced in the Work Based Learning Guide.

ENGINEERING

AUTOMATION ENGINEERING
CIP 15.0613.00

PATHWAY DESCRIPTION: 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 the practices of manufacturing by researching and developing tools, processes, machines, and equipment to integrate the facilities and systems for producing quality products with the optimal expenditure of capital.

Automation Engineering

Complete (1-2) ONE-TWO CREDITS:

_____ 210221 Engineering I***
_____ 210222 Engineering II

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

_____ 210225 Manufacturing Engineering
_____ 210251 Unmanned Aircraft Systems
_____ 210239 Robotics Automation and Design
_____ 332001 Intro to 3D Printing Technology
_____ 210330 Engineering Co-op
OR _____ 210331 Engineering Internship

Industry Certificate Exam:

- REC- Foundation Robotics Certificate *Fee: $50*
- FAA Remote Drone Pilot Certificate *Fee: $160*

(certification fees may be waived if grants are available)

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

210222 Engineering II: Grade 10-12. A project and research based course that extends the learning experiences where students focus on mechanical, electrical, fluid and thermal systems allowing in depth exploration in selected disciplines of engineering areas such as manufacturing, power/energy/transportation, robotics, hydraulics, electricity/electronics, communications, construction systems, alternative energy, computer-aided design, and problem solving. ***Lab fee- $20.00***

210225 Manufacturing Engineering: Grade 10-12. **Prerequisite: Engineering I or Engineering II**. This comprehensive course is designed for the study of general concepts and principles of manufacturing and manufacturing systems. This course provides for hands-on learning experience which enhances the understanding of various metallic/nonmetallic materials, processes, and products. Materials studied may include polymers, ceramics, woods, composites, and metal materials associated with manufacturing. Students have the opportunity to engage in product design, prototyping, computer-assisted manufacturing applications, CNC machines, robotics, and production management. Participation in Kentucky Skills USA will greatly enhance instruction. ***Lab Fee - $20.00***

210251 Unmanned Aircraft Systems: Grade 11-12. **Prerequisite:** Engineering I or Engineering II. This course is an introduction to unmanned aircraft systems (UAS). A history of UAS, typical applications and an overview of regulations, airframe and powerplant systems, sensors, ground control stations, airspace, weather, and other foundational skills needed to safely operate UAS in the U.S. airspace systems will be covered. This course will incorporate hands-on practical applications and will give students the opportunity to design, build, and pilot UAS, both remotely and autonomously. Students will be prepared to complete the Federal Aviation Administration's Part 107 Remote Pilot written exam upon completion of this course.

Participation in the Kentucky Technology Student Association will greatly enhance instruction. ***Lab Fee - $10.00***

210239 Robotics Automation and Design: Grade 10-12. **Prerequisite: Engineering I or Engineering II**. This course provides students with content and skills essential to the design and operation of robotic systems. Students' activities will include artificial intelligence specialized sensors, electronic applications, engineering technologies, environmental physics, manufacturing, topographical considerations, programming, motions physics, electric motors, communications, simulations, simulation and modeling, and critical thinking skills. Participation in Kentucky SkillsUSA will greatly enhance instruction. ***Lab Fee - $20.00***

332001 Introduction to 3D Printing Technology: Grades 10-12. An introduction to additive rapid prototyping manufacturing (three-dimensional printing), and its applications in conjunction with computer technology, including hardware, software, three-dimensional printing technology, file management, internet, security, and computer intellectual property ethics. Presents basic use of applications, programming, systems and utility software. ***Lab fee- $20.00***

210330 Engineering Co-op: Grade 12. Cooperative education is a paid educational program consisting of in-school instruction combined with the program related on-the-job work experience in a business or industrial establishment. These are planned experiences supervised by the school and the employer to ensure that each phase contributes to the student's Individual Learning Plan (ILP). Refer to the KDE Work-Based Learning Manual for further specifications. Students must co-op through an engineering pathway, have successfully completed three courses and be enrolled in a fourth.

210331 Engineering Internship: Grade 12. Internship provides supervised work-site experience for high school students associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. Students must intern through an engineering pathway, have successfully completed three courses and be enrolled in a fourth.

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 physical systems used in manufacturing and end-product systems including, but not limited to, fluid power, robotics, automation, rapid prototyping and machine control. Industrial/Mechanical Engineering is one of the broadest engineering disciplines.

Electrical/Electronics Engineering

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

_____ 210221 Engineering I***
_____ 210222 Engineering II

Complete (1) ONE CREDIT from the following:

_____ 210232 Electrical/Electronics Engineering

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

_____ 332001 Intro to 3D Printing Technology
_____ 210251 Unmanned Aircraft Systems
_____ 210110 Engineering Capstone
_____ 210330 210330 Engineering Co-op
OR _____ 210331 Engineering Internship

Industry Certificate Exam:

- REC- Foundation Robotics Certificate *Fee: $50*

(certification fees may be waived if grants are available)

*** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL

210222 Engineering II: Grade 10-12. A project and research based course that extends the learning experiences where students focus on mechanical, electrical, fluid and thermal systems allowing in depth exploration in selected disciplines of engineering areas such as manufacturing, power/energy/transportation, robotics, hydraulics, electricity/electronics, communications, construction systems, alternative energy, computer-aided design, and problem solving. ***Lab fee- $20.00***

210232 Electrical/Electronics Engineering: Prerequisite- Engineering I or Engineering II. Grade 10-12**.** In this course students will gain skills and knowledge through classroom and lab activities in the areas of basic DC and AC circuits, circuit components, codes, testing, electromagnetism and inductance, capacitance, power supplies, power generation and distribution, amplification, digital circuits, and computer fundamentals. Students will develop a basic understanding of the various types of energy and how energy is obtained. Students will learn the safe use of the tools, test instruments, equipment and supplies used in this course plus information on career opportunities in this field. Hands-on and problem-solving activities will expose students to areas of electron theory, Ohm's Law, insulators, conductors, electronic components, oscillators, and electronic fabrication. ***Lab fee- $10.00***

332001 Introduction to 3D Printing Technology: Grades 10-12. An introduction to additive rapid prototyping manufacturing (three-dimensional printing), and its applications in conjunction with computer technology, including hardware, software, three-dimensional printing technology, file management, internet, security, and computer intellectual property ethics. Presents basic use of applications, programming, systems and utility software. ***Lab fee- $20.00***

210251 Unmanned Aircraft Systems: Grade 11-12. **Prerequisite:** Engineering I or Engineering II. This course is an introduction to unmanned aircraft systems (UAS). A history of UAS, typical applications and an overview of regulations, airframe and powerplant systems, sensors, ground control stations, airspace, weather, and other foundational skills needed to safely operate UAS in the U.S. airspace systems will be covered. This course will incorporate hands-on practical applications and will give students the opportunity to design, build, and pilot UAS, both remotely and autonomously. Students will be prepared to complete the Federal Aviation Administration's Part 107 Remote Pilot written exam upon completion of this course. Participation in the Kentucky Technology Student Association will greatly enhance instruction. Lab ***Fee - $10.00***

210110 Engineering CAPSTONE: Prerequisites: Engineering I, Engineering II AND Electrical/Electronics Engineering. Grade 12. Engineering scope, content, and professional practices are presented through practical applications in this capstone course. Students in engineering teams apply technology, Kentucky Academic Standards, and skills to solve engineering design problems and create innovative designs. Students research, develop, test and analyze engineering designs using criteria such as design effectiveness, public safety, human factors and ethics. ***Lab fee- $30.00***

210330 Engineering Co-op: Grade 12. Cooperative education is a paid educational program consisting of in-school instruction combined with the program related on-the-job work experience in a business or industrial establishment. These are planned experiences supervised by the school and the employer to ensure that each phase contributes to the student's Individual Learning Plan (ILP). Refer to the KDE Work-Based Learning Manual for further specifications. Students must co-op through an engineering pathway, have successfully completed three courses and be enrolled in a fourth.

210331 Engineering Internship: Grade 12. Internship provides supervised work-site experience for high school students associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. Students must intern through an engineering pathway, have successfully completed three courses and be enrolled in a fourth.

COMPUTER SCIENCE

COMPUTER PROGRAMMING CIP 11.0201.01
PATHWAY DESCRIPTION: The Computer Programming pathway courses will prepare students to design and create apps, as well as troubleshoot the latest programming languages used in the industry. The coursework will include instruction in the principles of Computational science, Computer development and Computer Programming. Upon completion of this career

pathway, students will be prepared for an entry-level position or continue their education in Computer Programming.

Computer Programming

Complete (2) TWO CREDITS:

_____ 060112 Digital Literacy***

_____ 110251 Computational Thinking

Complete (2) TWO CREDITS from the following:

_____ 110821 APP Development with SWIFT

_____ 110226 Project Based Programming

_____ 110918 Computer Science Co-op (1 credit)

OR _____ 110919 Computer Science Internship (1 credit)

Industry Certificate Exam: Certiport IC3 GS6 Level + 1 Certiport IT Specialist Exam / App Development with Swift

*** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL

110226- Project-Based Programming: Grade 10-12. This project-based learning course engages those students with an entrepreneurial spirit that are interested in programming and in finding solutions to existing problems through the creation of applications. In this course, students will create projects that require computer science fundamentals and extensive research for successful completion. Students will work either solo or in a team to execute a project decided upon by the student(s). Students must learn and demonstrate proficiency in time management, scope, research, computer science, and teamwork to be successful in this course. Finally, students will engage in leadership skills by being held accountable for the completion of their tasks or project. The teacher will act more as a facilitator in this course and is highly encouraged to create his/her own project to demonstrate teacher "buy-in" to students. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110251 - Computational Thinking: Grade 10-12. Computational Thinking promotes understanding of computer programming and logic by teaching students to think like a computer. It covers skills needed to develop and design language-independent solutions to solve computer-related problems. Instruction covers the development and design basics including the use of variables, control and data structures, and principles of command-line and object-oriented languages. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110821- APP Development with Swift: Grade 10-12. App Development with Swift allows students to build a foundation in Swift, UIKit, and networking through hands-on labs and guided projects. At the end of each of the first five units, students will complete guided projects. Through these projects, students will create features that interest them, all while performing the type of work they can expect in an app development workplace. In the last unit, students will examine how to design, prototype, and architect an app of their own design. Students spend at least 20 hours of programming and applying learned concepts

through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110918- Computer Science Co-op: Grade 12. Cooperative Education for CTE courses provides supervised worksite experience related to the student's identified career pathway. A student must be enrolled in an approved course during the same school year that the co-op experience is completed. Students who participate receive a salary for these experiences, in accordance with local, state and federal minimum wage requirements according to the Work Based Learning Manual. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

110919- Computer Science Internship: Grade 12. Internship for CTE courses provides supervised worksite experience for high school students who are enrolled in a course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information references to the Work Based Learning Manual. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

NETWORK SECURITY
CIP 11.1003.00

PATHWAY DESCRIPTION: The Network Security pathway will help students be able to properly design and install and 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 a team member, learn new network administration support skills and upgrade existing computer information system skills.

Network Security

Complete (4) FOUR CREDITS:

_____ 060112 Digital Literacy (1 credit) ***

_____ 110101 Computer Hardware & Software Maintenance

_____ 110901 Intro to Networking Concepts
_____ 110912 Security Fundamentals
_____ 110918 Computer Science Co-op (1 – 3 credits)
OR _____ 110919 Computer Science Internship (1 credit)

Industry Certificate Exam: IC3 GS6 Level 2 + Certiport IT Specialist Networking or Network Security

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

110101 - Computer Hardware and Software Maintenance: Grade 10-12**.** This course presents a practical view of computer hardware and client operating systems. It also covers computer hardware components; troubleshooting, repair, and maintenance; operating system interfaces and management tools; networking components; computer security; and operating procedures. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110912 Security Fundamentals: Security Fundamentals introduces basic computer and network security concepts and methodologies. Covers principles of security; compliance and operational security; threats and vulnerabilities; network security; application, data, and host security; access control and identity management; and cryptography. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

110901 - Introduction to Networking Concepts (non-vendor): Grade 10-12. This course introduces technical-level concepts of non-vendor-specific networking including technologies, media, topologies, devices, management tools, and security. Provides the basics of how to manage, maintain, troubleshoot, install, operate, and configure basic network infrastructure. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

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110919- Computer Science Internship: Grade 12. Internship for CTE courses provides supervised worksite experience for high school students who are enrolled in a course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information references to the Work Based Learning Manual. Students spend at least 20 hours of programming and

applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

DIGITAL DESIGN & GAME DEVELOPMENT
CIP 36.0113.00

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

Digital Game Design

Complete (4) FOUR CREDITS:

_____ 060112 Digital Literacy ***
_____ 113601 Intro to Digital Game Graphics
_____ 113605 CIT 124 Game Design and Development Principles
_____ 113603 Advanced 3D Game Development
_____ 110226 Project-Based Programming
_____ 110251 CIT 120 Computational Thinking
_____ 110918 Computer Science Co-op
OR _____ 110919 Computer Science Internship

Industry Certificate Exam: App Development with Swift

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

113601 - Introduction to Digital Game Graphics: Grade 10-12. This course will focus on creating games using code, animation, and an introduction to 3D design software utilized in the industry. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction

113605 – Game Design and Development Principles: Grade 10-12. This course is an introduction to Game Design and Gaming. The course provides an overview of story development, gaming history, game reviews, current gaming trends, and industry software. Students will begin to create and develop a game story/plot that can be further developed in higher-level courses as well as critique current games. In addition, 2D game development software and image manipulation will be explored to further enhance their design skills. Career exploration into game design will be researched and gain awareness of job and postsecondary opportunities. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

113603 – Advanced 3D Game Development: Grade 10-12. This course emphasizes creating 3D graphics using one or more state-of-the-art software packages. Instruction provides students with a thorough understanding of techniques for designing advanced 3D games and simulations. Courses will cover 2D and 3D graphics, animation, character development, texturing, rigging, scripting, and game setup

using state-of-the-art software development tools. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.) Participation in Kentucky Technology Student Association or SkillsUSA will greatly enhance instruction.

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110919- Computer Science Internship: Grade 12. Internship for CTE courses provides supervised worksite experience for high school students who are enrolled in a course associated with their identified career pathway. Internship experiences consist of a combination of classroom instruction and field experiences. A student receiving pay for an intern experience is one who is participating in an experience that lasts a semester or longer and has an established employee-employer relationship. A non-paid internship affects those students who participate on a short-term basis (semester or less). All information references to the Work Based Learning Manual. Students spend at least 20 hours of programming and applying learned concepts through programming. (Programming is defined, by the K-12 CS Framework, as the craft of analyzing problems and designing, writing, testing, and maintaining programs to solve them.)

MANUFACTURING

WELDING MAINTENANCE TECHNICIAN
CIP 47.0303.06

PATHWAY DESCRIPTION: Welding Maintenance Technicians layout, fabricate, set up and weld metals in all positions. Welding Technicians must operate all types of welding equipment and apply safety first and comply with all OSHA guidelines and regulations. They read blueprints, apply mechanical skills, calculate shop mathematics and know the metal properties to perform welding procedures to meet industry specifications.

Welding

Complete (3) THREE CREDITS from the following:

_____ 470328 Welding for Maintenance
_____ 470354 Shielded Metal Arc Welding
_____ 470367 Gas Metal Arc Welding

Complete (1) ONE CREDIT from the following:

_____ 470322 Industrial Maintenance Electrical Principles
_____ 499920 Basic Blueprint Reading (0.5 credit)
_____ 470318 Maintaining Industrial Equipment
_____ 470305 Engineering & Technology Co-op OR (1 – 3 credits)
_____ 470308 Engineering & Technology Internship (1 credit)

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

470328 Welding for Maintenance: Grade 10-12**.** This course will provide basic instruction needed for students to weld using SMAW, MIG, TIG and Oxy-Fuel. Lab fee- $15.00

470354 Shielded Metal Arc Welding: Grade 10-12. This course presents students with the identification, inspection, and maintenance of SMAW electrodes, principles of SMAW, and effects of variables on the SMAW process to weld plate and pipe, and metallurgy. Lab fee- $15.00

470367 Gas Metal Arc Welding: Grade 10-12. This course covers identification, inspection, and maintenance of GMAW machines; identification, selection and storage of GMAW electrodes; principles of GMAW; and the effects of variables on the GMAW process. Theory and applications of related processes such as FCAW and SMAW and metallurgy are also included. Students learn the practical application and manipulative skills of Gas Metal Arc Welding and the proper safety situations needed in this process. Both ferrous and non-ferrous metals will be covered, as well as various joint designs on plate in all positions. Lab fee- $15.00

470322 Industrial Maintenance Electric Principles: Grade 10-12. This course introduces the theory of electricity and magnetism and the relationship of voltage, current, resistance, and power in electrical circuits. The course is designed to develop an understanding of alternating and direct current fundamentals. Students will apply formulas to analyze the operation of AC and DC circuits. Lab fee- $15.00

499920 Basic Blueprint Reading: Grade 10-12. This course presents basic applied math, lines, multi tier drawings, symbols, various schematics and diagrams, dimensioning techniques, sectional views, auxiliary views, threads and fasteners, and sketching typical to all shop drawings. Safety will be emphasized as an integral part of the course. Lab fee- $15.00

470318 Maintaining Industrial Equipment: Grade 10-12. This course is designed to introduce the student to maintenance techniques and procedures used to maintain industrial equipment. Lab fee- $15.00

470305 Co-op for Industrial Maintenance: Grade 12. Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.

470308 Industrial Maintenance Internship: Grade 12. The Internship provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Internship do not receive compensation.

WELDING MAINTENANCE TECHNICIAN
CIP 47.0303.06

PATHWAY DESCRIPTION: Welding Maintenance Technicians layout, fabricate, set up and weld metals in all positions. Welding Technicians must operate all types of welding equipment and apply safety first and comply with all OSHA guidelines and regulations. They read blueprints, apply mechanical skills, calculate shop mathematics and know the metal properties to perform welding procedures to meet industry specifications.

Welding

Complete (2) THREE CREDITS from the following:

_____ 470322 Industrial Maintenance Electrical Principles
_____ 470318 Maintaining Industrial Equipment

Complete (2) ONE CREDIT from the following:

_____ 499920 Basic Blueprint Reading (0.5 credit)
_____ 470321 Fluid Power
_____ 470328 Welding for Maintenance
_____ 210221 Engineering 1**
_____ 332001 Intro to 3D Printing
_____ 470305 Engineering & Technology Co-op OR (1 – 3 credits)
_____ 470308 Engineering & Technology Internship (1 credit)

***** DENOTES COURSES TAUGHT AT THE HOME HIGH SCHOOL**

470322 Industrial Maintenance Electric Principles: Grade 10-12. This course introduces the theory of electricity and magnetism and the relationship of voltage, current, resistance, and power in electrical circuits. The course is designed to develop an understanding of alternating and direct current fundamentals. Students will apply formulas to analyze the operation of AC and DC circuits. Lab fee- $15.00

470318 Maintaining Industrial Equipment: Grade 10-12. This course is designed to introduce the student to maintenance techniques and procedures used to maintain industrial equipment. Lab fee- $15.00

499920 Basic Blueprint Reading: Grade 10-12. This course presents basic applied math, lines, multi tier drawings, symbols, various schematics and diagrams, dimensioning techniques, sectional views, auxiliary views, threads and fasteners, and sketching typical to all shop drawings. Safety will be emphasized as an integral part of the course. Lab fee- $15.00

470328 Welding for Maintenance: Grade 10-12**.** This course will provide basic instruction needed for students to weld using SMAW, MIG, TIG and Oxy-Fuel. Lab fee- $15.00

470321 Fluid Power: Grade 10-12. This course is a study of fluid power theory, component identification and application, schematic reading, and basic calculations related to pneumatic and hydraulic systems and their operations. Lab fee- $15.00

332001 Introduction to 3D Printing Technology: Grades 10-12. An introduction to additive rapid prototyping manufacturing (three-dimensional printing), and its applications in conjunction with computer technology, including hardware, software, three-dimensional printing technology, file management, internet, security, and computer intellectual property ethics. Presents basic use of applications, programming, systems and utility software. Lab fee- $20.00

470305 Co-op for Industrial Maintenance: Grade 12. Cooperative Education provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Cooperative Education program receive compensation for their work.

470308 Industrial Maintenance Internship: Grade 12. The Internship provides supervised on-the-job work experience related to the student's educational objectives. Students participating in the Internship do not receive compensation.

TRANSPORTATION

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. Includes instruction in brake systems, electrical systems, engine performance, engine repair, suspension and steering, automatic and manual transmissions and drive trains, and heating and air condition systems.

Automotive Maintenance & Light Repair

Complete (3) THREE COURSES from the following:

_____ 470507 Automotive Maintenance and Light Repair Section A and Lab
_____ 470509 Automotive Maintenance and Light Repair Section B and Lab
_____ 470511 Automotive Maintenance and Light Repair Section C and Lab
_____ 470511 Automotive Maintenance and Light Repair Section D and Lab
_____ 470501 Co-Op Automotive

Automotive Maintenance and Light Repair and Lab Sections A, B, C, D: Grade 10-12. These courses introduce the scholar to the principles, theories, and concepts of Automotive Technology and include instruction in the maintenance and light repair of Engines, Brake Systems, Electrical/Electronic Systems, Suspension and Steering Systems, Automatic and Manual Transmission/Transaxles, and Engine Performance Systems. In all areas, appropriate theory, safety, and support instruction will be taught and required for performing each task, including proper care and cleaning of customers' vehicles. The instruction will also include identification and use of appropriate tools and testing/measurement equipment required to accomplish certain tasks. The scholar will also receive the necessary training to locate and use current reference and training materials from accepted industry publications and resources, and demonstrate the ability to write work orders. *Fees: Lab fee- $15.00 per course. ASE MLR Certification Exam-$45* ***(these fees may be waived if grants are available)***