

**Guidance Document:** 

Careers, Skills, and Postsecondary Opportunities for Kentucky CTE Pathways

2025-26 Program of Studies - Pathways

(Updated June 16, 2025)

#### Introduction

Understanding Career and Technical Education (CTE) pathways, potential careers, and postsecondary programs is crucial for guiding students into pathways that align with their interests, aptitudes, and values. With each of the 122 pathways offering ten to twelve (or more) potential career options, having an in-depth knowledge of all possible career paths is nearly impossible. This document aims to provide a snapshot of potential careers that these pathways can lead to.

This document offers a brief overview of each career pathway and is not exhaustive in its information. When exploring fields of study, a thorough investigation of career paths should be part of the student's process. It is recommended that the CTE teacher of the student's pathway or an industry professional be involved in the student's further research to provide a real-world perspective.

The postsecondary programs listed include state community colleges and universities. Private universities are not listed unless they offer the only degree available in Kentucky. **Students should conduct a thorough investigation of all available programs for their postsecondary studies and select the one that best meets their needs.** 

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# AGRICULTURAL 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

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Focuses on promoting and selling agricultural products, often working on branding, market research, and advertising campaigns.       marketing, sales, and management1.       seasons.         Supply Chain Manager: Manages the logistics of getting agricultural products from farms to consumers, ensuring efficiency and minimizing costs.       Adaptability: Willingness to learn and adapt to new agricultural technologies and methods.       Collaborative Environment Agribusiness professionals often work in teams, collaborating with other managers, workers, and external partners (e.g. vendors, customers, etc.).	Agricultural Marketing Specialist	and written communication for	per week, particularly during peak	
agricultural products, often working on branding, market research, and advertising campaigns.       Adaptability: Willingness to learn and adapt to new agricultural technologies and methods.       Collaborative Environment         Supply Chain Manager: Manages the logistics of getting agricultural products from farms to consumers, ensuring efficiency and minimizing costs.       Adaptability: Willingness to learn and adapt to new agricultural technologies and methods.       Collaborative Environment	Focuses on promoting and selling	marketing, sales, and management1.	seasons.	
on branding, market research, and advertising campaigns.       Adaptability: Willingness to learn and adapt to new agricultural technologies and methods.       Collaborative Environment         Supply Chain Manager: Manages the logistics of getting agricultural products from farms to consumers, ensuring efficiency and minimizing costs.       Adaptability: Willingness to learn and adapt to new agricultural technologies and methods.       Collaborative Environment	agricultural products, often working			
advertising campaigns.       adapt to new agricultural technologies       Agribusiness professionals often work         Supply Chain Manager: Manages       and methods.       Agribusiness professionals often work         the logistics of getting agricultural       and methods.       Agribusiness professionals often work         products from farms to consumers,       ensuring efficiency and minimizing       partners (e.g. vendors, customers,         costs.       etc.).       etc.)	on branding, market research, and	Adaptability: Willingness to learn and	Collaborative Environment	
Supply Chain Manager: Manages       and methods.       in teams, collaborating with other         the logistics of getting agricultural       and methods.       in teams, collaborating with other         products from farms to consumers,       ensuring efficiency and minimizing       partners (e.g. vendors, customers,         costs.       etc.).       etc.).	advertising campaigns.	adapt to new agricultural technologies	Agribusiness professionals often work	
Supply Chain Manager: Manages       managers, workers, and external         the logistics of getting agricultural       products from farms to consumers,         ensuring efficiency and minimizing       etc.).		and methods.	in teams, collaborating with other	
products from farms to consumers, ensuring efficiency and minimizing costs.	Supply Chain Manager: Manages		managers, workers, and external	
ensuring efficiency and minimizing etc.).	the logistics of getting agricultural		partners (e.g. vendors, customers	
costs.	ensuring efficiency and minimizing		etc.).	
	costs.			

# 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.

Career Choices	Aptitudes Needed	<b>Common Work Environments</b>	Postsecondary Opportunities
			in Kentucky
Agricultural Engineer: Design	Mechanical Skills:	Varied Settings: Work	KCTCS Campues
and develop machinery,	Understanding how machines	environments can range from	
equipment, and structures	and tools work, including their	outdoor agricultural fields to	HCC Henderson Community
used in agriculture. Focus on	design, use, repair, and	indoor workshops and	College- Agriculture   HCC
improving efficiency,	maintenance.	laboratories. You might find	
sustainability, and productivity.	Problem-Solving Abilities:	yourself working on farms, in	HCC-Hopkinsville Community
	Ability to identify issues and	greenhouses, or at agricultural	College- Agriculture   HCC
Diesel Technician: Specialize	develop practical solutions,	equipment manufacturing	
in the maintenance and repair	especially in mechanical and	facilities.	OCTC-Owemsboro Community
of diesel engines used in	structural contexts.		and Technical College-
agricultural machinery.	Technical Knowledge:	Hands-On Work: The job often	Agriculture Studies   OCTC
	Familiarity with agricultural	involves practical, hands-on	
GIS Specialist: Use	machinery, power systems, and	tasks such as operating and	University Programs
Geographic Information	structural components.	maintaining machinery,	
Systems to analyze and	Mathematical Skills:	constructing agricultural	University of Kentucky-
manage spatial data for	Proficiency in math,	structures, and performing	https://www.ca.uky.edu/
agricultural purposes.	particularly in areas like algebra	technical repairs.	
	and geometry, which are		Agricultural Systems
Land Surveyor: Measure and	essential for technical	Technical and Mechanical	Technology   Agriculture
map land areas for agricultural	calculations and	Focus: You'll work with a	Murray State University
development and planning.	measurements.	variety of tools and equipment,	
	Attention to Detail: Precision	including tractors, irrigation	Department of Agriculture and
Farm Equipment Technician:	in tasks such as welding,	systems, and other agricultural	Food Science   Western
Maintain and repair farm	electrical work, and machinery	machinery. Understanding and	Kentucky University
machinery and equipment.	repair.	applying principles of	
	Physical Stamina: Ability to	engineering, hydraulics, and	Bachelor of Science in
Contractor/Builder: Construct	perform physically demanding	electronics is crucial.	Agriculture - Eastern Kentucky
agricultural buildings and	tasks, often in outdoor		University
structures, ensuring they meet	environments.	Collaborative Environment:	-
safety and efficiency	Teamwork and	Many roles require teamwork	Agricultural Sciences
standards.	Communication: Effective	and effective communication	Morehead State University
	collaboration and	with other professionals, such	<u>Kentucky</u>
Welder: Fabricate and repair	communication skills for	as engineers, technicians, and	
metal structures and	working with peers and	farmers.	Agriculture and Natural
equipment used in agriculture.	Instructors.		Resources - Berea College
	Satety Awareness:	Safety-Conscious: Safety is a	
Millwright: Installs, maintains,	Understanding and adhering to	top priority. You'll need to	
industrial machinery and	salety protocols to prevent	notice safety protocols to	
industriat machinery and	accidents and injunes	prevent accidents and ensure a	
equipment.		sale working environment.	
		Problem-Solving: The work	
		often involves troublesheating	
		and solving technical issues	
		requiring strong problem	
		solving skills and the ability to	
		think on your feet	
		timik on your leet.	

# 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.

Animal Nutritionist: These professionals formulate diets for animals to ensure their optimal health and performance.         Strong Science Background: Proficiency in biology and chemistry is essential, a sthese subjects form the foundation of animal sciences studies.         Physical Demands: Many roles involve hands-on work with animals, which can be physically demanding. This might include if filing.         CCTC, Elizabethtown Animal Science 2. Certificate           Wildlife Biologist: Wildlife blookigst study animals in their natural habitats, focusing on behavior, genetics, and conservation.         Mitterst in Animals: a genuine interest in Animals: 2 genuine interest in working with animals animals behaviorist: Animal behavioris, entating, or caring for animals to understanding their behavioris, beathy and wellow risin a duriderstanding their behavioris, actively the behaviorist actions and develop training programs.         Physical Demands: Many roles involving animals health and develop practical solutions, especially in animal health and develop practical solutions, especially in animal health and develop practical solutions, especially in animal heavior, administering areatments, and conduction for animals in coulding on the job, you grooming, and cleaning their behavioris task and solutions in labstratories, offices, or can expose you to various wester conditions.         University Programs           Animal Care Specialist: These specialists provide besic care for animals, including freeding, prooring, and cleaning their behavior, athin borstory equipment and to for animals, including freeding, prooring, and cleaning their behavior, athin borstory equipment and ther in outdoor or farm estings.         Physical Librory equipment animals and humans is a significant responsibility. This includes foliting resevencis, or collaborating with the scientists work and ha	Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
Animal Nutritionist: Inese professionals formulate dist for animals to ensure their optimal health and performance.Briting Science Background: Physical Jemands: May roles involve hands-on work with animals, which can be might include lifting, restantial, statistics, for analyzing data and conducting research.Physical Jemands: May roles involve hands-on work with animals, swich can be might include lifting, restanting, or caring for animals, as well as maintaining, or caring for analyzing data and conducting research.Corts CampuesAnimal Behaviorist: Animal behavior, search of animals to understand fing their interest in working with animals and understanding their behavior, statistics, for analyzing data and conducting research.Work Hours: Animal scientists often work full: time, but the hourd search, or holidays, especially in roles index and understanding their lindor and Outdoor Work: Lagrouthure IMedia care response or to natural habitas, noucleaning they rest healthy and welfers.CortC-Opekinsville Community care response their Wing environments.Zockeeper: Zookeepers cookeepers care for animals in zoos and aquariums, ensuring they are healthy and welferding.Not their statistics, Outdoor Work: tasks, softe o basic care for animals in cluding feeding, grooming, and cleaning their tasks, softe o basic care for animals in cluding feeding, grooming, and cleaning their tasks, softe o basic care for animals including feeding, grooming, and cleaning their tasks, softe o basic care for animals including feeding, grooming, and cleaning their tasks, softe o basic care for animals including feeding, grooming, and cleaning their tasks, softe ot animals conduction statigg.CortC-opekinsvill				in Kentucky
protection       Protection <td>Animal Nutritionist: These</td> <td>Strong Science Background:</td> <td>Physical Demands: Many roles</td> <td>KCICS Campues</td>	Animal Nutritionist: These	Strong Science Background:	Physical Demands: Many roles	KCICS Campues
Out minutes to ensure their optimate has and performance.Chemistry is essentiate, as used subjects form the foundation of animal science studies.animate science studies.Entremate management.Entremate management.Wildlife biologists study animats in the behavior of animals conservation.Interest in Animals: A genuin interest in Animals: A genuin interest in working with animats and understanding of math, particularly statistics, for analyzing data and conducting research.Hold and conducting research.Hold and conducting animal science studies.Hold and conducting animal science studies.Hold and conducting animal science studies.Hold and conducting animal science studies.Hold and conducting animal science studies.Concept Animals and understand their to animals in zoos and animal behavior, thealth, and wetfare.Hold any, especially in roles field work.Cort C-Owemsboro Community and Technical College- africate in AS)Zookeeper: Zookeepers care for animals, including feeding, grooming, and ceaning they are heathy and well-maintang, and ceaning their production of animals for food, grooming, and ceaning their production of animals to frod produres.Hysical Venagement, animal beartion or the production of animals for food, fight, or other products.Hysical Venagement, animal beartion or the production of animals to frod of animals to indrive and programs.Hysical Venagement, animal scientists work as part of a team, collaborating with animal scientists work as part of a team, and potential yfile or data analysis.Hold and Animal Science travel to different cocations for field work, conferences, or collaborative projects. This	for onimals to oncure their	chemistry is acceptial, as these	involve hands-on work with	FOTO Elizabethtown Animal
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Integration of animals for food, fiber, or other products.       computer skills for data analysis.       analysis.       analysis.       protocols to prevent injuries and the spread of diseases.       Program — Pre-Veterinary Program.         Animal Geneticist: Animal geneticists study the genetics of animals to improve breeding programs and enhance desirable traits.       analysis.       Travel: Some roles may require travel to different locations for fieldwork, conferences, or collaborative projects. This can add variety to the job but may also require time away from home.       Veterinary Science, B.S.   Morehead State University   Kentucky	These managers oversee the	techniques as well as basic	significant responsibility This	Louisville's Pre-Veterinary
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Animal Geneticist: Animal geneticists: Animal geneticists study the genetics of animals to improve breeding programs and enhance desirable traits.       Travel: Some roles may require travel to different locations for fieldwork, conferences, or collaborative projects. This can add variety to the job but may also require time away from home.       Morehead State University   Kentucky         Regulatory Affairs Specialist:       home.       Home.			and the spread of diseases.	
geneticists study the genetics       travel to different locations for       Morehead State University I         of animals to improve breeding       travel to different locations for       fieldwork, conferences, or         programs and enhance       collaborative projects. This can       add variety to the job but may         desirable traits.       also require time away from       home.         These specialists ensure that       home.       Image: Construction of the second	Animal Geneticist: Animal		Travel: Some roles may require	Veterinary Science, B.S.
of animals to improve breeding programs and enhance desirable traits.       fieldwork, conferences, or collaborative projects. This can add variety to the job but may also require time away from home.       Kentucky         Regulatory Affairs Specialist: These specialists ensure that       home.       Implementation	geneticists study the genetics		travel to different locations for	Morenead State University
programs and enhance     collaborative projects. This can       desirable traits.     add variety to the job but may       also require time away from     home.	of animals to improve breeding		fieldwork, conferences, or	Kentucky
desirable traits.     add variety to the job but may also require time away from home.       Regulatory Affairs Specialist: These specialists ensure that     home.	programs and enhance		collaborative projects. This can	
Regulatory Affairs Specialist:     also require time away from       These specialists ensure that     home.	desirable traits.		add variety to the job but may	
Regulatory Affairs Specialist:     home.       These specialists ensure that			also require time away from	
These specialists ensure that	Regulatory Affairs Specialist:		home.	
	These specialists ensure that			
animal-related products and	animal-related products and			
practices comply with	practices comply with			
government regulations.	government regulations.			

# Environmental Science and Natural Resources Systems CIP 03.0101.00

This pathway focuses on 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Environmental Specialist:	Strong Foundation in STEM:	Office and Laboratory Work:	KCTCS Campuses
These professionals monitor	Proficiency in science,	Many environmental scientists	
the impact of the environment	technology, engineering, and	and specialists spend a	Environmental Science
on people and propose	math (STEM) subjects is	significant amount of time in	Technology   BCTC (AAS and
solutions to environmental	crucial.	offices and laboratories.	Biotech Certificate programs at
issues.			BCTC)
	Analytical Skills: The ability to	Fieldwork: A substantial part of	
Environmental Technician:	analyze data, interpret	the job involves fieldwork. This	Other KCTCS campuses that
Environmental technicians	scientific research, and solve	can include collecting	offer courses in environmental
identify, assess, and prevent	complex problems is essential.	samples, conducting surveys,	Sciences
various forms of contamination		and monitoring environmental	
within the environment.	Communication Skills:	conditions. Fieldwork can take	Environmental Science
	Effective written and verbal	you to various locations such	Technology   KCTCS) (KCTCS
Wildlife Biologist: Wildlife	communication skills are	as forests, wetlands, rivers, and	general information page)
biologists study animals in their	important for presenting	urban areas.	
natural habitats, focusing on	research findings, writing		Jefferson Community and
behavior, genetics, and	reports, and collaborating with	Outdoor Job Sites: For those in	Technical College (JCTC)
conservation.	others.	natural resource management,	
		work often takes place	West Kentucky Community and
Marine Biologist: Marine	Passion for the Environment:	outdoors. This might involve	Technical College (WKCTC)
biologists research life within	A genuine interest in	managing wildlife habitats,	
the ocean and other saltwater	environmental issues and a	overseeing conservation	Madisonville Community
areas.	commitment to sustainability	projects, or working in parks	College (MCC)
	can drive motivation and	and protected areas.	
Environmental Chemist:	success in this field.		Somerset Community College
These chemists collect and test		Indoor Facilities: Some roles,	(SCC)
soil, air, and water samples to	Fieldwork Experience: Hands-	like those of environmental	
determine their quality and how	on experience through	technicians, may involve	University Programs
they affect the environment.	internships, volunteer work, or	working in indoor facilities	UK-Natural Resources &
	participation in environmental	where they inspect businesses	Environmental Science
Soil Technician: Soil	projects can provide practical	and industrial sites for	Academics
technicians improve soil	knowledge and skills.	compliance with environmental	
quality, reduce soil erosion,	To an and the second Could be made and	regulations.	U of L Department of
and foster sustainable land	learnwork and Collaboration:	Colleborative Environments	Geographic and Environmental
usage techniques.	working well with others,	Collaborative Environment:	Sciences
CIS Technician: CIS	ncluding scientists,	Collaboration with other	W/// Forth Environmental
toophioione croate outom	members, is often personally	scientists, policymakers, and	wko-Earth, Environmental,
Coographic Information	onvironmental science		and Atmospheric Sciences
Systems to manipulate and	careers1		Murray State-Department of
understand land data		Variable Conditions: The work	Farth and Environmental
	Adaptability and Creativity:	environment can vary greatly	Sciences
Microbiologist: Microbiologists	The ability to adapt to new	depending on the specific job	00000000
study microorganisms and their	challenges and think creatively	and location. You might	NKU-Environmental Science
effects on the environment	to solve environmental	experience different weather	
	problems is highly valued.	conditions, terrains, and	
		ecosystems.	

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Food Technologist: Food technologists work on developing and improving food products, ensuring they are safe, nutritious, and of high quality. Quality Assurance Manager: These professionals ensure that food products meet safety and quality standards. Food Safety Specialist: Food safety specialists focus on preventing foodborne illnesses by oncuring that food production	Strong Foundation in Science and Math: Courses in biology, chemistry, and mathematics are essential. Understanding scientific principles and being able to apply Analytical Skills: The ability to analyze data and solve problems. Attention to Detail: Precision is key in food science.	Laboratory and Production Environments: Food scientists often work in laboratories, conducting experiments and quality control tests. They may also work in production facilities, overseeing the processing and packaging of food products. Physical Demands: While the work is generally less physically demanding than fieldwork, it can still involve standing for	in Kentucky University Programs UK Food Biosciences Program   Animal & Food Sciences Department of Agriculture and Food Science   Western Kentucky University Kentucky State University   Division of Food and Animal Science
ensuring that food production processes comply with health regulations. Sensory Scientist: Sensory scientists study how food's taste, smell, and texture affect consumer preferences.	<b>Communication Skills:</b> Both written and verbal communication skills are important for documenting research, writing reports, and collaborating with others.	can still involve standing for long periods, handling heavy equipment, and performing repetitive tasks. Health and Safety: Workers must adhere to strict hygiene and acfety protocolo to provent	
Flavor Chemist: Flavor chemists create and test new flavors for food and beverages.	<b>Teamwork:</b> Many projects in food science require working in teams, so being able to collaborate effectively is necessary	and safety protocols to prevent contamination and ensure food safety. Work Hours: The hours can be	
Nutritionists and dietitians create diet plans and food programs to help individuals maintain healthy lifestyles.	<b>Curiosity and Creativity:</b> A natural curiosity about how things work and a creative approach to problem-solving	production facilities that operate around the clock. Some roles may require working nights, weekends, or holidays.	
Food Research and Development Technician: These technicians assist in developing new food products and recipes, ensuring accurate sample preparation and maintaining organized records1.	can help in developing new food products. <b>Technical Skills</b> : Familiarity with laboratory equipment and techniques, as well as basic computer skills.	<b>Stress Levels:</b> The need to meet production deadlines and maintain high standards of quality can create a high-pressure environment.	
Food Market Researcher: These professionals analyze consumer and competitor data	Time Management: The ability to manage time effectively and handle multiple tasks is	Collaboration and Communication: Food scientists often work as part of a team, collaborating with	
<b>Food Inspector:</b> Food inspectors ensure that food products meet safety and quality regulations.	important, especially when balancing coursework and lab work.	other scientists, engineers, and production staff. Regulatory Compliance:	
		Ensuring compliance with food safety regulations and standards is a critical part of the job. This involves staying up to date with the latest regulations and implementing necessary changes in processes and procedure	

# 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

Horticulturist: Horticulturist:     Strong Foundation in Science and Math:: Courses in biology, chemistry, and mathematics are essential. Understanding sientifi principles and being path left in the between fieldwork and Laboratory work.     KCTCS Campuess       Crop Consultant: Crop Consultants advae farmer on best practices for planting, fertilizing, and managing crops.     Analytical Skills: The ability on analyze data and solve problems is important. This includes interpreting scientific data and conducting experiments. Laboratory work includes analyzing samples, conducting experiments. Laboratory work includes analyzing samples, conducting genetic research, and developing new plant wareles.     University Programs       Varies interactions is such as increased yield, disease agricultural productivity and path left interactivits is such as increased yield, disease agricultural productivity and sustainability.     Attention to Detail: Precision is key in plant science; whither it's measuring soil nutrients.     Physical Demands: Fieldwork can be physically demanding, involving indop soro soutdoors, sometimes in extreme weather inportant for documenting research and writing reports.     Mutrary State       Soil and Plant Scientist: Soid and plant scientist study soil interactivits in surgery.     Curiosity and Passion for Plants: A natura curiosity about how plants grow and interactivit their environment agricultural productivity and sustainability.     Healt and Safety: Workers interactive in writing reports.     Mutrary State       Agronomist: Agronomists bandle chering and managing natural resources.     The Management: The ability on protecting and managing natural resources.     The Management: The ability on anget in effectively is beneficial.       Technical Skultis: Famu	Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
Protecturations to nutroticiturities control and specific and Matric Courses in biology chemistry, and mathematics are essential. Understanding scientific principles and define biole to apply.Predework and Laboratory vol. Specific their time between field work and Laboratory vol. Specific their time between field work and Laboratory vol.North Center Katheween field work and Laboratory vol.Crop Consultant: Crop consultants advise farmers on best practices for planting, retriking, and mathematics and partices with desirable traits such as includes interpreting scientific data and conducting experiments.Analytical Skills: The shilly to analyze data and solve experiments. Laboratory wol.University ProgramsPlant Breeder/Geneticist: These professionals develop mey plant growth, calify, disease resistance, or improved and plant interease divid, disease: and plant scientist study soil properties and plant interactions to improve and plant scientist for planting research and writing reports.Curiosity and Passion for Plants a natural curiosity about how plants grow and interact with their environment and sustainability.Curiosity and Passion for Plants scientist for documenting research and writing reports.Health and Safey: Workers must fold work tours: The hours con bei irreguice repocially during plant gione torus curio scientist study plant interact with their environment at scientist study plant torus on plants scientist for theory on that baoratory equipment and techniques, as well as basit communication skills are important of documenting in theory equipment and techniques, as well as basit communication skills are important and uniting reports.The flat basit techniques, as well as		Strong Foundation in Salance	Fieldwerk end Lebenstern:	
<ul> <li>Curve and manage pains, for closing on moving plant is closing on moving plant the time between field work and laboratory work in water work field work and laboratory work field work and laboratory work in water work field work and laboratory work in water work field work and laboratory work in water work in water work field work and laboratory work in water work field work and laboratory work in water work work in water work in water work work in water work work in water work in water work work in water work work in water work work in water work in water work work in water work in water work in water work work in work</li></ul>	Aultivate and manage plants	Strong Foundation in Science	Work: Plant acientists often	KCTCS Campuses
<ul> <li>Browni, quality and painting of mit points and given in quality and painting of mit points and diseases.</li> <li>Browni, quality and existance in the point of the point</li></ul>	focusing on improving plant	chemistry and mathematics	split their time between	Horticulture - Certificate:
<ul> <li>b pests and diseases.</li> <li>crop Consultant: Grop Consultants advise farmers on best practices for planting, fartilizing, and managing crops.</li> <li>Plant Breder/Geneticis: These professionals develop new plant varieties with desirable traits such as increased yield, disease experiments.</li> <li>Attention to Detail: Precision induces integreting solutioning and plant scientists such such and such and scientists such such and scientists such as intrar communication skills are important for documenting in teams, so being plate to collaborate with ther research and writing response.</li> <li>Teamwork: Many projects in plant scientist requery and in teams, so being plate to collaborate with ther response, some and scientists computer skills, are useful?.</li> <li>Ther durant evolution controlled environments.</li> <li>Ther durant evolution in portant/</li> <li>Ther durant evolution interact the scientist scolut</li></ul>	growth quality and resistance	are essential Understanding	fieldwork and laboratory work	KCTCS: offered at both
Analytical Skills: The ability to consultants advise farmers on best practices for planting, retriking, and managing cross.analytical Skills: The ability to analyze data and solve problems is important. The analyze data and solve problems is important. The sep relax signal disease and plant science, vingroved and solt management.Sumer science, vincer science in working about how plants grow and interact with weir environmenta, research and writing reports. Teamwork: Many projects in planting and harvesting in team, so being able to collaborate effectively is beneficial.Sumer science, vincer science in working in team, so being able to collaborate with direr conduction skills are sciencials requertly research and writing reports. Teamwork: Many projects in in teams, so being able to collaborate effectively is beneficial.Sumer science, vincer sciencials requertly conduction skills are team science, vincer, stramers, and argicultural professionals. Effet/work sciencials sciencials incorduction skills are service. <td>to pests and diseases.</td> <td>scientific principles and being</td> <td>Fieldwork involves collecting</td> <td>Henderson Community College</td>	to pests and diseases.	scientific principles and being	Fieldwork involves collecting	Henderson Community College
Crop Consultant: Crop Consultants divise forms: on test practices for planting, fertiking, and managing crops.Analytical Skills: The babity analyze data and solve problems is important. This includes interpreting scientific data and conducting experiments.Collage.Collage.Collage.Pant Breeder/Geneticist: These professionals develop new plant varieties such as increased yield, disease and plant scientest. Soli and plant scientists study soli titrational value.Attention to Detail: Precision is key in plant science, whether is dentifying plant diseases.2.Physical Demands: Fieldwork, can be physically demanding, involving ing hours outcidies, and plant science, whether interactions to improve agricultural productivity and sustainability.Curiesity and Pasison for Plants: antural curiosity about how plants grow and interactions to improve agricultural productivity and sustainability.Physical Demands: Fieldwork, can be physically demanding, involving ing hours outcidies, and laboratory equipment safely.Market And Safely: Workers must follow safely protocols to handle chemicals, pesticidies, and laboratory equipment safely.Murray StatePant Pathologist: Rant plant sciences.Temwork: Mary projects in plant science require working in tars, so being able to collaborate with other research and writig resorts.Collaborate with other research scientists forus on interactions to there, some and arequire early mornings, late evenings, or weekend owch.Collaborate with other results, are userul.Greenbuse Manager: Greenbuse Manager: Contoliced environments.Temmork: Angangement: The ablity to inloadies situs are userul.Temmork: Angangement: Teme		able to apply.	samples, conducting	and Madisonville Community
consultants advise farmers on best practices for planting, fertilizing, and managing crops.Analytical Skills: The ability of handyze data and solve problems is important. This includes interpreting scientific data and conducting experiments.Inite advise farmers. conducting genetic research, and Sold SciencesUniversity of Kentucky Plant and Sold SciencesPlant Breeder/Geneticist: These professionals develop new plant varieties.Attention to Detail: Precision is key in plant diseases.Physical Demands: Fieldwork can be physicalt demands.University of Kentucky Plant and Sold SciencesSoil and Plant Scientist: Soil and plant scientist study soil properties and plant interactions to improve agricultural productivity and sustainability.Curiosity and Passion for Plants: natural curiosity about how plants grow and interact with their environmenti, agricultural productivity and sustainability.Curiosity and Passion for Plants: natural curiosity and laboratory equipment satistications kills are interact with their environmenti, to and sold management.Murray StatePlant Brohogist: Flant diseases and develop methods to protecting and managing to ecolution of plants in controlled environments. Teamwork: Many projects in plant acience require working in teams, so being able to collaborate effectively is beneficial.Technologist Baudy to diseases and develop methods to protecting and develop methods to protecting and analysing in teams, so being able to collaborate effectively is beneficial.Technologist Baudy to disease and develop methods to and sold management.Technologist Baudy to disease and develop methods to collaborate effectively is beneficial.Techn	Crop Consultant: Crop		experiments, and monitoring	College.
best practices for planting, fertilizing, and managing crops.analyze data and solve problems is important. This includes interpreting scientific data and conducting experiments.environments. Laboratory work includes analyzing samples, conducting genetic research, and developing new plant varieties.University FregramsHant Breeder/Geneticist: These professionals develop new plant varieties with desirable traits such as increased yield, disease resistance, or improved nutritional value.Attention to Detail: Precision is key in plant science, whether it's measuring soil nutrients conductions routing long hours outdoors, sometimes in extreme weather conditions.Huiversity of Kentucky, Plant and Soil Science 1 Wester Mentucky, University Kentucky, State University I Option in Agricultural SystemsSoil and Plant Scientist: interact with their environment agricultural productivity and managing natural resources.Corticity and Passion for Plants: A natural curiosity about how plants giow and interact with their environment communication skills: ret minotant of documenting research and writing reports.Heatth and Safety: Workers minotant of documenting research and writing reports.Murray StateRenomist: Agronomists specialize in crop production and solit management: to provent and control temp.Technical Skills: Familiarity with laboratory equipment and to provent and control temp.Technical Skills: Familiarity with laboratory equipment and to provent and control temp.University of Kentucky, State University I Option in Agricultural SystemsGreenhouse Manager: forenhouse managers overses to provent and control temp.Technical Skills: Familiarity with lab	consultants advise farmers on	Analytical Skills: The ability to	plant growth in various	0
fertilizing, and managing crops.problems is important. This includes analyzing samples, and dowloping new plant vireties with desirable traits such as increased yield, disease previnters is meportant. This increased yield, disease the measuring soil nutrients or identifying plant diseases2.unversity of Kentucky Plant and dowloping new plant varieties.Unversity of Kentucky Plant and Soil SciencesSoil and Plant Scientist Soil and plant scientist study soilAttention to Detail: Precision identifying plant diseases2.Physical Demands: Fieldwork rames or bipysically demanding, involving long hours outdoors, sometimes in extreme weather conditions.Murray StateSoil and Plant Scientist Soil and plant scientist study soil properties and plant interactions to improve agricultural productivity and sustainability.Curiosity and passion for Plants: A natural curiosity about how plants grow and interactions to the their environment.Heath and Safety: Workers must follow safety protocols to planting and harvesting seasons. Some roles may require early mornings, late enclusar terme weakend work.Murray StateFunctoreal Scientist: Agronomist: Agronomists and soil management.Technical Skills: Familiarity with laboratory equipment and to honde chemicals, pessens. Some roles may researches, farmers, and and soil management.Technical Skills: Familiarity with laboratory equipment and to indentify to mange time effectively and handie multiple tasks is important?Colaboration and Colaboration skills researches, and insportant.Greenhouse managers overseen to provent and cornot them.Technical Skills: Familiarity with laboratory equipment scientists conduct experimen	best practices for planting,	analyze data and solve	environments. Laboratory work	University Programs
Plant Sreeder/Coneticist: These professionals develop new plant varieties with deta and conducting experiments.conducting genetic research, varieties.University of Kantucky Plant and Soll SciencesMethod desirable traits such as increased yield, disease resistance, or improved nutritional value.Attention to Detail: Precision is key in plant science, whether it's measuring soli nutritional value.Hysical Demads: Fieldwork can be physically demanding. involvement sits study soli interactions to improve agricultural productivity and boat how plants grow and interact with their environment.Physical Demads: Fieldwork can be physically demanding. involvement scientists cut, soli and babor tooy plants grow and interact with their environment.Physical Demads: Fieldwork can be physically demanding. involvement scientists cut, soli and babor how plants grow and interact with their environment.Physical Demads: Fieldwork can be physically demanding. The elath and Safety. Workers must follow safety protocols to industors y equipment safely.Murray StateEnvironmental Scientists potocitis for documenting research and writing reports.Tommunication Skills are important for documenting research and writing reports.Work Hours: The hours can be require early mornings, late evenings, or weekend work.Heilth and Safety Fieldwork sciences may require early mornings, late evenings, or weekend work.Plant Science Science Science science work is protocitists conduct experiments to advance knowledge.Tomma age time effectively is beneficial.Fieldwork exposes workers to various environmental conductions, including heat, cold, rain, and insects.Heilth and Safety field 	fertilizing, and managing crops.	problems is important. This	includes analyzing samples,	
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Technological and Scientific         Advances: The field is         constantly evolving with new         technologies and scientific         discoveries. Staying up to date         with the latest research and         techniques is crucial for	to advance knowledge.			
Advances: The field is         constantly evolving with new         technologies and scientific         discoveries. Staying up to date         with the latest research and         techniques is crucial for			Technological and Scientific	
constantly evolving with new technologies and scientific discoveries. Staying up to date with the latest research and techniques is crucial for			Advances: The field is	
technologies and scientific discoveries. Staying up to date with the latest research and techniques is crucial for			constantly evolving with new	
with the latest research and techniques is crucial for			technologies and scientific	
techniques is crucial for			uiscoveries. Staying up to date	
techniques is cruciation			techniques is crucial for	
SUCCESS			SUCCESS.	

# BUSINESS AND MARKETING EDUCATION CAREER PATHWAYS

#### 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.

**Career Choices Aptitudes Needed Common Work Environments** Postsecondary Opportunities in Kentucky **Certified Public Accountant** Strong Mathematical Skills: A Office Setting: Most **KCTCS** Campuses (CPA): CPAs provide solid understanding of accountants work in an office accounting services such as mathematics, particularly environment, often in a Accounting - Certificate < auditing, tax preparation, and algebra and basic arithmetic, is corporate setting, accounting **KCTCS** consulting. essential. firm, or government agency. Universities in Kentucky Financial Analyst: Financial Attention to Detail: Precision Remote Work: With analysts evaluate financial data is crucial in accounting. advancements in technology, **UK-Accounting** to help businesses make many accounting tasks can be Analytical Thinking: The ability Accountancy: University of investment decisions. performed remotely, allowing to analyze data, identify trends, for flexible work arrangements. Louisville - College of Business Management Accountant: and solve problems is Analyze financial information to important. Standard Business Hours: Department of Accounting | assist management in Typically, accountants work Western Kentucky University decision-making. Organizational Skills: Good standard business hours (9 AM organizational skills are to 5 PM), but this can vary. Accounting: Northern Kentucky Auditor: Auditors examine necessary to manage multiple University, Greater Cincinnati financial records to ensure tasks, keep accurate records, Overtime: During busy periods, **Region** accuracy and compliance with and maintain orderly financial such as tax season or year-end regulations. documents. closing, accountants may work **Bachelor of Business** longer hours to meet deadlines. Administration — Accounting -Tax Advisor: Tax advisors Communication Skills: Both Eastern Kentucky University specialize in tax planning and written and verbal Routine Tasks: Daily tasks preparation. communication skills are include preparing financial Accounting, BBA | Morehead statements, managing budgets, important for explaining State University | Kentucky Budget Analyst: Budget financial information clearly. and ensuring compliance with analysts help organizations financial regulations. Accounting Program | Murray plan their finances. Ethical Judgment: A strong State University sense of ethics and integrity is Special Projects: Accountants **Forensic Accountant:** vital in accounting. may also work on special Forensic accountants projects, such as audits, Computer Literacy: Ability to financial analysis, and strategic investigate financial discrepancies and fraud. gain skill with accounting planning. software and basic computer Financial Manager: Financial skills are essential. Deadlines: The need to meet managers oversee the financial strict deadlines can create a health of an organization. Time Management: The ability high-pressure environment. to manage time effectively and Controller: Controllers meet deadlines. Attention to Detail: Accuracy manage the accounting is crucial, and mistakes can operations of a company. Data Analysis: Utilize various have significant consequences, data analysis tools and adding to the stress. Accounting Clerk: Accounting methodologies clerks handle basic accounting tasks.

#### 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

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
	•		in Kentucky
Administrative Assistant:	Organizational Skills: Being	Office Environment: Most	KCTCS Campuses
Administrative assistants	able to manage multiple tasks,	administrative support roles	
perform a range of clerical	keep accurate records, and	are based in office settings.	Administrative Office
duties, including preparing	maintain an orderly workspace.		<u>Technology   BCTC</u>
documents, organizing		Remote Work: With	
workspaces, and scheduling	Attention to Detail: Precision	advancements in technology,	Administrative Office
meetings.	is important when handling	many administrative tasks can	lechnology   ECIC
Office Manager: Office	documents, scheduling, and	be performed remotely.	
managers oversee the	data entry.	To any Oallah anatiana	Hopkinsville & Owensboro: (go
operations of an office, manage	Communication Chiller Streng	leam Collaboration:	to KCICS general page)
support starr, maintain	Communication Skills: Strong	Administrative support often	Administrative Office
the administrative team has the		ather teem members including	Technology   NCTCS
the administrative team has the	communication skills are	managera executives and	Administrative Office
officiently		other administrative staff	
	culleagues, clients, and	other auministrative start	
Coordinator: HB coordinators	supervisors.	Client Interaction: Depending	Administrative Office
assist with various HB	Computer Literacy: Familiarity	on the role you may interact	Technology I WKCTC
functions such as recruiting	with office software such as	with clients customers or the	<u>rectifictogy   WKCTC</u>
employee records	Microsoft Office (Word, Excel	nublic	
management and answering	PowerPoint) and other	public.	
employee questions	administrative tools is	Structured Boutine:	
Data Entry Specialist: Data-	important	Administrative roles often	
entry specialists input and	importanti	involve a structured routine	
manage data in computer	Time Management: The ability	with regular tasks such as data	
systems, ensuring accuracy	to prioritize tasks and manage	entry, filing, and managing	
and efficiency.	time effectively is crucial.	schedules.	
Receptionist: Receptionists			
are the first point of contact for	Problem-Solving Skills: Being	Busy Periods: Certain times of	
visitors and callers. They	able to think critically and solve	the year, such as the end of the	
handle phone calls, greet	problems efficiently.	fiscal year or during major	
visitors, and perform various		projects, can be particularly	
administrative tasks to support	Interpersonal Skills: Good	busy.	
the office.	interpersonal skills help in		
Customer Service	building positive relationships	Supportive Role: As an	
Representative: Customer	with colleagues and clients.	administrative professional,	
service representatives handle		you play a crucial supportive	
customer inquiries,	Ethical Judgment: A strong	role in ensuring the smooth	
complaints, and provide	sense of ethics and integrity is	operation of the office	
information about products	vital, as administrative		
and services. They often work	professionals often handle		
in call centers or customer	sensitive information.		
service departments.			
Project Coordinator: Project	Data Analysis: Utilize various		
coordinators assist in planning,	data analysis tools and		
executing, and closing projects.	methodologies.		
	Front Logistics Discusives		
	Event Logistics Planning:		
	manage logistical aspects of		
	events, including venue		
	budget control guest		
	buuget control, guest		
	and post event reporting		
		1	1

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Marketing Specialist:	Communication Skills:	Fast-Paced Environment:	KCTCS Campuses
Develops and implements	Effective written and verbal	E-commerce is a rapidly	
marketing strategies to boost	communication is crucial for	evolving industry, often	Home   BCTC Offers a variety of
online sales and brand	marketing, customer service,	requiring quick decision-	business-related programs that
awareness.	and team collaboration.	making and adaptability to new	may include e-commerce
		trends and technologies.	components.
Customer Service	Analytical Thinking: The ability		
Representative: Handles	to analyze data and make	Collaborative Culture: Many	Home   JCTC Provides business
customer inquiries and issues.	informed decisions is essential	e-commerce companies	administration programs with
	for roles like data analysis.	emphasize teamwork and	potential e-commerce
Web Developer: Designs and		collaboration across different	specializations.
maintains e-commerce	Technical Proficiency: Basic	departments, such as	
websites.	knowledge of web	marketing, IT, customer	Home   GCTC: Features
	development, coding, and	service, and logistics.	business and IT programs that
Data Analyst: Analyzes sales	using e-commerce platforms		can encompass e-commerce
data to help businesses make	can be very beneficial.	Customer-Centric Focus: A	studies.
informed decisions and		significant part of e-commerce	
improve their online strategies.	Creativity: Creativity is	involves understanding and	University Programs
	important for roles in	meeting customer needs. This	
Content Writer: Creates	marketing, content creation,	means a lot of roles are geared	UK-Gatton College of Business
engaging product descriptions,	and user experience design2.	towards enhancing user	and Economics: Offers various
blog posts, and other content	Problem-Solving Skills: Being	experience and customer	business and technology
to attract and retain	able to troubleshoot issues and	satisfaction.	programs that can include e-
customers1.	find solutions quickly is		commerce components.
	valuable in any e-commerce	Remote and Flexible Work	
SEO Specialist: Optimizes	role.	Options: With the rise of digital	University of Louisville –
website content to improve		tools, many e-commerce jobs	College of Business: Provides
search engine rankings and	Time Management: Managing	offer remote work opportunities	business administration and
drive organic traffic.	time effectively to meet	and flexible schedules,	information technology
	deadlines and handle multiple	allowing for a better work-life	programs with potential e-
Social Media Manager:	tasks is crucial.	balance.	commerce specializations.
Manages social media			
accounts to engage with	Customer Focus:	Continuous Learning and	Western Kentucky University:
customers and promote	Understanding customer needs	Development: Today's industry	Features business and
products.	and providing excellent service	is constantly changing, so	marketing programs that may
	is key to success in e-	remaining abreast on the latest	cover e-commerce topics.
Supply Chain Manager:	commerce.	developments and professional	
Oversees the entire supply		growth/continued learning is	
chain process, from	Adaptability: The e-commerce	essential.	
procurement to delivery.	landscape is constantly		
	changing, so being adaptable	Tech-Driven: E-commerce	
	and open to learning new skills	neavily relies on technology, so	
	is important.	you can expect to work with	
		various digital tools and	
	Data Analysis: Utilize various	platforms, and possibly be	
	data analysis tools and	involved in data analysis, SEO,	
	methodologies	and digital marketing.	

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
Financial Analyst: Analyzas	Applytical Skills: The ability to	Hybrid Work Models: Many	
financial data to beln	analyze financial data identify	financial services firms have	Keres campuses
businesses make informed	trends, and make data-driven	adopted hybrid work models.	Business Administration - AAS
decisions.	decisions.	allowing employees to split	KCTCS
		their time between the office	·····
Financial Planner/Advisor:	Attention to Detail: Precision	and remote work.	<b>Business Communication</b> -
Works with individuals to	is essential in financial services		Certificate KCTCS
create personalized financial	to ensure accuracy in financial	Fast-Paced and High-	
plans, including retirement	reporting and compliance.	Pressure: The industry often	<u>Business Transfer - Certificate &lt;</u>
planning, investment		involves high-stakes decision-	KCTCS
strategies, and tax planning.	Communication Skills:	making and tight deadlines.	
Investment Devices Lister	Possess strong oral and written	Oallahanatina Aturaanhana.	Business Foundations -
Investment Banker: Helps	communication skills	Collaborative Atmosphere:	<u>Certificate &lt; KCTCS</u>
issuing stocks or bonds and	Internersonal Skills: Ability to	projects require collaboration	University Programs
provides advisory services	build and maintain	across different departments	Oniversity Programs
	relationships with clients	deress different departments.	LIK-Gatton College of Business
Loan Officer: Evaluates and	colleagues, and stakeholders.	Structured and Regulated:	and Economics:
approves loan applications for		Financial services are highly	
individuals and businesses.	Problem-Solving: The capacity	regulated, so there is a strong	University of Louisville –
	to identify issues and develop	emphasis on compliance and	College of Business
Credit Analyst: Assesses the	effective solutions.	adherence to policies and	
creditworthiness of individuals		procedures.	Morehead State University,
or companies to determine the	Technical Proficiency:		Elmer R. Smith College of
risk of lending money.	Familiarity with financial	Professional Development:	Business & Technology
	software, data analysis tools,	Continuous learning and	
Insurance Underwriter:	and other technology.	professional development are	Western Kentucky University:
Evaluates insurance	Ethical ludgment and	encouraged, with many firms	College of Rusiness - Fostern
applications and determines	Integrity: Upholding ethical	opportunities for career	College of Busiliess - Eastern
premiums	standards and demonstrating	advancement	<u>Kentucky Oniversity</u> .
promuns.	integrity in all financial dealing.		Northern Kentucky University
Risk Manager: Identifies and		Technology-Driven: The	Haile College of Business
mitigates financial risks within	Adaptability: Be able to adapt	industry relies heavily on	
an organization.	to new regulations,	technology, so you can expect	Murray State University, Arthur
	technologies, and market	to work with various financial	J. Bauernfeind College of
Compliance Officer: Ensures	conditions.	software and data analysis	<u>Business</u>
that a company adheres to		tools.	
financial regulations and	Business Acumen:		
internal policies.	Understanding how businesses	Client-Focused: Building and	
Wealth Managary Dravidaa	operate and making money	maintaining client relationships	
high not worth individuals with	financial advice and convices1	is a key aspect, requiring strong	
comprehensive financial	Infancial advice and services I.		
services including investment	Emotional Intelligence:	communication skitts.	
management, estate planning.	Managing your own emotions		
and tax advice.	and understanding others'		
	emotions.		
	Data Analysis: Utilize various		
	data analysis tools and		
	methodologies		
	Accountancy: Pasia to		
	advanced accounting skills		
	aavanooa aoooanting skitts.		

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
			in Kentucky
Hotel Manager: Oversees the	Communication Skills:	Irregular Hours: Many roles	KCTCS Campuses
operations of a hotel, ensuring	Effective verbal and written	require working evenings,	-
guest satisfaction and efficient	communication.	weekends, and holidays to	Hospitality Management -
management of staff and		accommodate guests and	Certificate < KCTCS
resources	Customer Service	travelers. Shift work is	
	Orientation: A strong focus on	common, and hours can be	University Programs
Event Planner: Organizes and	providing excellent service and	long and unpredictable.	
coordinates events such as	ensuring customer satisfaction		EKU-Global Hospitality &
weddings, conferences, and		Physical Demands: Jobs in	Tourism
corporate meetings.	Interpersonal Skills: The	this field often involve standing	
	ability to build and maintain	for long periods, lifting heavy	NKU: Online Hotel
Travel Agent: Assists clients in	positive relationships with a	items, and performing	Management
planning and booking travel	diverse range of people.	repetitive tasks.	
arrangements, including flights,			UK-Hospitality Management &
accommodations, and tours.	Organizational Skills: Being	Customer Interaction: High	Tourism
	able to manage time, tasks,	levels of customer interaction	
Food and Beverage Manager:	and resources efficiently.	are typical, requiring strong	WKU-Hotel, Restaurant, &
Manages the operations of		communication and	Tourism Management
restaurants, bars, and other	Problem-Solving Abilities: The	interpersonal skills. Employees	Concentration
food service establishments.	capacity to handle unexpected	must be able to offer excellent	
Omine Dimension Diama and	situations and find solutions.	service under pressure.	
Cruise Director: Plans and	Attention to Details Enguring	Stress Levels, The need to	
oversees activities and	Attention to Detait: Ensuring	Stress Levels: The field to	
entertainment on cruise snips.	planning and customer	and manage busy periods can	
Sna Manager: Manages the	interactions	create a high-stress	
operations of a spa including	interactions.	environment	
staff, services, and customer	Adaptability: The industry can		
satisfaction.	be fast-paced and ever-	Health and Safety: Workers	
	changing, so being flexible and	must adhere to safety	
Hospitality Analyst: Analyzes	open to new experiences is	protocols to prevent accidents	
data to improve business	beneficial.	and ensure a safe environment	
operations and customer		for guests.	
experiences.	Cultural Awareness:		
	Understanding and respecting	Wages and Benefits: Pay can	
Tour Guide: Leads groups on	different cultures enhances the	vary significantly, with many	
tours, providing information	ability to serve a diverse	entry-level positions offering	
and insights about the	clientele.	low wages. Benefits such as	
destinations.		health insurance and paid	
	Teamwork: Many roles require	leave may be limited,	
Recreation Manager:	working closely with others, so	especially in smaller	
Oversees recreational facilities	being a good team player is	establishments.	
and programs, such as sports	important.		
complexes, parks, and		Seasonal Employment: Many	
community centers.	Technical Proficiency:	jobs in tourism and recreation	
	Familiarity with industry-	are seasonal, with peak periods	
	specific software and tools.	during holidays and vacation	
	Data Analysis Hilling	seasons. This can lead to	
	Data Analysis: Utilize various	periods of unemployment or	
	uata anatysis tools and	underemployment.	
	methodologies		

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
MANAGEMENT CAREERS	Leadership Skills: The ability	Work Hours: Managers and	KCTCS Campuses
General Manager: Oversees	to inspire and guide others.	entrepreneurs often work long	
operations, manages staff, and		and irregular hours, including	Entrepreneurship - Certificate <
ensures business goals are	Critical Thinking: Analyzing	evenings and weekends, to	KCTCS
met.	situations, identifying	meet deadlines and manage	
<b>Operations Manager:</b> Focuses	problems, and developing	business operations.	<u> Management - Certificate &lt;</u>
on improving efficiency and	effective solutions.		KCTCS
productivity within an		Stress Levels: High levels of	
organization.	Communication Skills: Strong	responsibility and the need to	University Programs
Project Manager: Plans,	verbal and written	make critical decisions can	MANACEMENT
Executes, and closes projects.		create a stressful environment.	MANAGEMENT
Manages recruitment	essentiat.	<b>Elevibility:</b> While the bours can	LIK Management
employee relations and	Creativity and Innovation: The	be demanding there is often a	
organizational development	ability to think outside the box	degree of flexibility in how and	Lof Management
Marketing Manager: Develops	and come up with new ideas	where work is done	<u>o or E Hundgomont</u>
and implements marketing			WKI I-Management Bachelor of
strategies to promote products	Organizational Skills:	Collaboration and	Science
or services.	Managing time, tasks, and	Communication: Effective	
Financial Manager: Oversees	resources efficiently.	communication and teamwork	NKU-Management
financial planning, budgeting,		are essential. Managers and	0
and reporting.	Financial Literacy:	entrepreneurs frequently	EKU-Bachelor of Business
Sales Manager: Leads sales	Understanding basic financial	collaborate with employees,	Administration
teams, sets sales goals, and	principles, such as budgeting,	clients, and stakeholders.	
develops strategies.	accounting, and financial		Murray State-Management
	analysis.	Travel: Depending on the	
ENTREPRENEUSHIP CAREERS		business, travel may be a	ENTREPRENEURSHIP
Business Owner: Starts and	Resilience and Adaptability:	significant part of the job. This	
runs their own business,	The ability to bounce back from	can include attending	Entrepreneurship: University of
managing all aspects from	setbacks and adapt to	meetings, conferences, and	Louisville – College of Business
Startup Foundary Loupoboo o	changing circumstances.	networking events.	Innovation & Entropropourable:
new business venture often in	Networking Skills: Building	Continuous Learning: The	Northern Kentucky University
innovative or emerging	and maintaining professional	dynamic nature of business	Greater Cincinnati Region
markets.	relationships.	requires staving updated with	
Consultant: Provides expert		industry trends, new	Entrepreneurship, Bachelor of
advice to businesses on how to	Teamwork: Collaborating	technologies, and best	Science-Western Kentucky
improve operations, strategy,	effectively with others is	practices.	University
and profitability.	essential for achieving		
Product Manager: Develops	common goals and fostering a	Financial Risk: Entrepreneurs,	Kentucky State University
and manages products from	positive work environment.	in particular, face financial	Business Certificate Programs
conception to market launch.		risks, especially in the early	
Venture Capitalist: Invests in	Ethical Judgment: Upholding	stages of a business. Managing	
startups and helps them grow	ethical standards and	cash flow and securing funding	
by providing capital and	demonstrating integrity in all	are critical aspects of the role.	
strategic guidance.	business dealings.		
husiness under the brend and	Data Analysia: Utiliza variaua	opvironment oon von from	
business model of an	data analysis tools and	corporate offices to home	
established company	methodologies	offices or co-working spaces	
secandionou compuny.	methodologico	The setting often depends on	
	Risk Analysis/Management:	the nature and size of the	
	Identify, assess, and mitigate	business.	
	potential risks to minimize		
	negative impacts and maximize		
	opportunities.		

## 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

-			
Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Marketing Manager: Oversees	Communication Skills:	High Level of Social	KCTCS Campuses
marketing strategies and	Effective verbal and written	Interaction: Marketing	-
campaigns to promote	communication is crucial for	professionals frequently	Social Media Marketing -
products or services.	conveying ideas clearly and	interact with customers.	Certificate < KCTCS
	persuasively	coworkers and stakeholders	
Social Media Manager	poroduoivoty.	This involves communication	The following campuses offer
Manages an organization's	<b>Creativity:</b> The ability to think	through various means such as	various marketing courses
appiel modio processo and	outside the box and develop		within their business
	innovative marketing strategies	face mostings and	administration program
Campaigns			auministration program.
Market Desservels Analysists	and campaigns.	presentations.	Rusiness Administration   ROTO
Market Research Analyst:			Business Administration   BCIC
Analyzes market conditions to	Analytical Skills: Strong	Teamwork: Collaboration is a	
identify potential sales	analytical skills are needed to	key part of marketing.	Business Administration   JCTC
opportunities.	interpret market data,	Professionals often work as	
	understand consumer	part of a team to develop	Business Administration
Brand Manager: Develops and	behavior, and measure the	strategies, create campaigns,	GCTC
maintains a brand's image,	effectiveness of marketing	and solve problems.	
ensuring consistency across all	efforts.		University Programs
marketing efforts.		Indoor Work Environment:	
	Teamwork: Marketing often	Most marketing roles are office-	Murray State University
Digital Marketing Specialist:	involves collaboration with	based, with occasional travel	Marketing
Focuses on online marketing	others, so being able to work	for meetings, conferences, or	_
strategies, including SEO, email	well in a team is important.	client visits.	University of Kentucky
marketing, and online			Marketing
advertising	Problem-Solving: The ability to	Competitive Atmosphere: The	
da tot donig.	identify problems and come up	marketing field is highly	Marketing: University of
Content Marketing Manager:	with effective solutions	competitive with strict	Louisville – College of Business
Creates and manages content		deadlines and performance	
strategies to attract and retain	Time Management: Managing	targets	
customers	multiple projects and meeting	targets.	
customers.	doodlings requires good	Decision Making Marketing	
Public Polations Specialist:	organizational and time	managers and professionals	
Managaa tha public imaga of an	management akilla	make decisions that can	
Manages the public image of an	management skitts.	niake decisions that can	
organization and nandles	To share to start Day Colorson	significantly impact the	
communication.	lechnological Proficiency:	company's reputation and	
	Familiarity with digital tools and	financial performance.	
Event Manager: Plans and	platforms used in marketing,		
coordinates events to promote	such as social media, analytics	work Hours: Marketing roles	
products or services.	software, and content	often involve long hours,	
	management systems.	especially during campaign	
Advertising Manager:		launches or peak business	
Develops and manages	Data Analysis: Utilize various	periods.	
advertising campaigns across	data analysis tools and		
various media channels.	methodologies	Travel: Depending on the role,	
		travel may be required to meet	
Sales Manager: Leads a sales		with clients, attend industry	
team and develops strategies		events, or conduct market	
to meet sales targets.		research.	
		Use of lechnology: Marketing	
		protessionals frequently use	
		various software and tools for	
		data analysis, campaign	
		management, and customer	
	1	relationship management.	

# 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

Retail Sales Associate: Engage directly with customers she pithem find products, and handle transactions.Communication Skills: Ibre aditect perfectively uncludes both verbal and witten communication.Fast-Read Atmosphere Buys, especially during peciality Ming periations, manage staff, and ensure customers shefting three staff, and ensure customer satisfaction.KCTCS CampusesStore Manager: Overse daily operations, manage staff, and ensure customer satisfactions.Customer Farvice Orientation: A genuine interest in helping customers and ensuring they have a positive experience is essential.Customer Interaction: A significant part of the job involves interacting with customers shefting them find products or retail stores, often working closely with suppliers.Team Collaboration: You'll work closely with other staff members, including staff store runs smoothly.Management, Muray State UniversityLoss Prevention Specialist: Imperent Interactions.Teamwork: Working well with ophers to achieve common gata and maintain apositive work environment.Teamwork: Working well with others to achieve common gata and maintain positive work environment.Physical Activity: The job can be physical detruming, ator curso store fulls; to privite keys, and maintain positive work environment.Hanagement: Nerthern Kentucky University, Greater Clincinati RegionLuss Prevention Specialist: Imperent Interactions.Teamwork: Working well with ophisa, staffing prioting, applicable taxes and maintain apositive work environment.Feasible Hours: Retail jobs other metal stores.Fashion Remotending: <b< th=""><th>Career Choices</th><th>Aptitudes Needed</th><th><b>Common Work Environments</b></th><th>Postsecondary Opportunities</th></b<>	Career Choices	Aptitudes Needed	<b>Common Work Environments</b>	Postsecondary Opportunities
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fashion items for retail stores.       understanding pricing, applicable taxes and discounts.       component of performance evaluation.         Adaptability: Being flexible and able to adjust to new tasks, technologies, and changes in the retail environment.       Clean and Well-Lit Spaces: Most retail stores are designed to be inviting and comfortable for customers, which means you'll typically work in clean, well-lit areas.	and manage the selection of	cash transactions and	quotas and is often a major	
applicable taxes and discounts.evaluation.Adaptability: Being flexible and able to adjust to new tasks, technologies, and changes in the retail environment.evaluation.Data Analysis: Utilize various data analysis tools and methodologiesevaluation.	fashion items for retail stores.	understanding pricing.	component of performance	
discounts. Adaptability: Being flexible and able to adjust to new tasks, technologies, and changes in the retail environment. Data Analysis: Utilize various data analysis tools and methodologies		applicable taxes and	evaluation.	
Adaptability: Being flexible and able to adjust to new tasks, technologies, and changes in the retail environment.Clean and Well-Lit Spaces: Most retail stores are designed to be inviting and comfortable for customers, which means you'll typically work in clean, well-lit areas.Data Analysis: Utilize various data analysis tools and methodologiesAdaptability: Being flexible and to be inviting and comfortable for customers, which means you'll typically work in clean, well-lit areas.		discounts.		
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the retail environment. you'll typically work in clean, well-lit areas. Data Analysis: Utilize various data analysis tools and methodologies		technologies, and changes in	for customers, which means	
well-lit areas. <b>Data Analysis:</b> Utilize various data analysis tools and methodologies		the retail environment.	you'll typically work in clean,	
Data Analysis: Utilize various data analysis tools and methodologies			well-lit areas.	
data analysis tools and methodologies		Data Analysis: Utilize various		
methodologies		data analysis tools and		
		methodologies		

#### 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.

Career Choices	Antitudes Needed	Common Work Environments	Postsecondary Opportunities
	Aprillues Needed	Common Work Environments	in Kentucky
Purchasing Agent:	Analytical Skills: The ability to	Office and Warehouse	KCTCS Campuses
Responsible for buying the	analyze data and make	Environments: Supply chain	
equipment, supplies, and	informed decisions is crucial.	professionals often work in	Supply Chain Management
services needed for an		office settings for planning and	(Logistics)   BCTC
organization.	Mathematical Proficiency: A	coordination but may also	University Due strenge
Legistics Analysts Overses	strong foundation in	spend time in warehouses or	University Programs
the entire production life evole	mathematics, particularly in	distribution centers.	Murroy State Logistics and
of a product from raw	statistics is essential	Physical Demands: Boles in	Supply Chain Management
materials to distribution.		warehouses and distribution	oupply onamendadomonic
	Communication Skills:	centers can be physically	Supply Chain Management
Logistics Manager: Manages	Effective communication, both	demanding, involving lifting,	Sullivan University
the supply chain operations,	written and verbal.	moving goods, and operating	
including purchasing,		machinery. Office roles are less	
distribution, and team	Organizational Skills: Being	physical but can involve long	
coordination.	well-organized helps in	hours at a desk.	
	managing multiple tasks,	···· ··· ···	
Operations Manager: Focuses	coordinating logistics, and	work Hours: The hours can be	
on improving organizational	ensuring that all aspects of the	that require coordination with	
management and process	supply chain fun shioothy.	international suppliers or	
optimization.	Attention to Detail: Precision	managing logistics operations.	
	is key in supply chain	Shift work and overtime are	
Supply Chain Analyst:	management to avoid errors.	common, particularly in	
Specializes in optimizing	_	warehouses.	
supply chain networks.	Technical Skills: Ability to gain		
	familiarity with software tools	Stress Levels: Managing	
Procurement Specialist:	and technologies used in	supply chain disruptions,	
Manages the acquisition of	supply chain management.	meeting deadlines, and	
goods and services, ensuring	Duchlass Calving Abilities. The	ensuring efficient operations	
cost-enectiveness and quality.	capacity to identify issues	can create a high-stress	
Inventory Control Manager	think critically and develop	environment.	
Oversees inventory levels.	effective solutions.	Health and Safety: Ensuring	
ensuring that stock is		safety in warehouses and	
maintained at optimal levels.	Teamwork and Collaboration:	during transportation is critical.	
	Working well in a team is	Workers must follow safety	
Distribution Manager:	important as you will work with	protocols to prevent accidents	
Manages the distribution of	multiple partners.	and injuries.	
products, ensuring timely and		O . II . h . mati . m . m d	
efficient delivery.	Adaptability: The ability to	Collaboration and	
Demand Planner: Forecasts	circumstances and new	communication and teamwork	
product demand to ensure that	technologies is crucial	are essential Supply chain	
supply meets customer needs.		professionals frequently	
	Ethical Judgment:	collaborate with suppliers,	
	Understanding and adhering to	logistics providers, and other	
	ethical standards in business	departments.	
	practices is important.		
		Technological Integration: The	
	Data Analysis: Utilize various	use of technology is prevalent	
	data analysis tools and	in supply chain management,	
	methodologies	monogement legistics	
		nlanning and data analysis	
		Promining, and data analysis.	

# COMPUTER SCIENCE CAREER PATHWAYS

#### 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
Additive Manufacturing		Material Exposure: Workers	
	Computer-Aided Design	may be exposed to powdered	Keres campuses
designing and ontimizing 3D	(CAD): Familiarity with CAD	materials liquid resins and	Madisonville Community
printing processes and	software is crucial for designing	other substances	College-3D Printing Technician
systems.	3D models.		
		Emissions: 3D printers can	Somerset Community College-
3D Printing Technician:	Mathematical Proficiency:	emit volatile organic	3D Printing Technician
Operates and maintains 3D	Strong skills in geometry and	compounds (VOCs) and	
printing equipment, ensuring	algebra are important.	ultrafine particles (UFPs) during	University Programs
that machines run smoothly		the printing process.	
and produce high-quality parts.	Mechanical Aptitude:		UK-Stanley and Karen Pigman
	Understanding basic	Mechanical Risks: Handling	College of Engineering
Materials Scientist: Develops	mechanical principles and how	and maintaining machines can	
and tests new materials for use	machines work	pose risks of mechanical injury.	Kentucky State University
in additive manufacturing,			School of Engineering and
including metals, polymers,	ANALUTICAL SKILLS	Fire and Explosion:	<u>Technology</u>
and composites.	Problem-Solving: The ability to	Flammable materials used in	
	troubleshoot and solve	some processes can create fire	Bachelor of Science in
Product Designer: Uses 3D	technical problems.	hazards.	Manufacturing Engineering -
printing technology to create			Eastern Kentucky University
prototypes and final.	Attention to Detail: Precision	Ventilation: Proper ventilation	
	is key in additive manufacturing	systems to reduce inhalation	
Quality Control Specialist:	to ensure high-quality outputs.	risks from emissions.	
Ensures that 3D printed			
products meet quality	CREATIVITY	Personal Protective	
standards and specifications.	Innovative Ininking: The ability	Equipment (PPE): Use of	
Beesewah and Development	to think creatively and design	gloves, masks, and protective	
(B&D) Specialist: Works on	unique solutions.	to bezordoue motoriale	
(R&D) Specialist: Works on	Effective Communication:	to hazardous materiats.	
manufacturing technologies	Being able to clearly	Training: Comprehensive	
and applications	communicate ideas and	training on safe handling of	
	collaborate with others	materials and operation of	
Supply Chain Specialist:	collaborate with others.	machines	
Manages the logistics and	Understanding of Technology:		
supply chain aspects of	Familiarity with the latest	Regular Monitoring:	
additive manufacturing.	technologies and trends in	Continuous monitoring of air	
addition managed and g	additive manufacturing can	guality and machine	
Sales and Marketing	give students an edge1.	performance to ensure a safe	
Specialist: Focuses on	Hands-On Skills:	working environment	
promoting and selling 3D		C C	
printing products and services.	Practical Experience: Comfort	Workstation Design:	
	with hands-on work, including	Ergonomically designed	
Consultant: Provides expert	operating and maintaining 3D	workstations to reduce strain	
advice to companies looking to	printers.	and injury.	
implement or optimize additive			
manufacturing processes.		Breaks and Rotation: Regular	
		breaks and rotating tasks to	
		prevent repetitive strain	
		injuries.	

# 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.

		· · · · · ·	
Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Web Developer: Designs and	Logical Thinking: The ability to	Work Environment: Most	KCTCS Campuses
creates websites ensuring they	think logically and	computer programmers work in	
are visually appealing and	systematically	office settings often within the	Computer and Information
functional	systematically.	computer systems design and	
Tunctionat.	Mathematical Draficianov A	computer systems design and	<u>Technology   Netes</u>
Coffeenant Development Development	Mathematical Proficiency: A		
Software Developer: Develops	strong loundation in	However, remote work has	University Programs
software applications for	mathematics, particularly in	become increasingly common.	
various platforms, including	algebra and discrete		Computer Science, Morehead
desktop, mobile, and web.	mathematics.	Hours: Programmers usually	State University
		work full-time, with a standard	
Systems Analyst: Analyzes	Problem-Solving Skills: The	40-hour work week. However,	Computer Science (CSC)
and designs information	capacity to identify problems,	overtime may be required to	Murray State
systems to help organizations	think critically, and develop	meet project deadlines.	
	effective solutions.		Computer Science-Eastern
Database Administrator:		Tasks: Their daily tasks include	Kentucky University
Manages and maintains	Attention to Detail: Precision	writing, modifying, and testing	
databases ensuring data is	is key in programming to avoid	code and scripts to ensure	Computer Science Major:
stored securely and can be	errors and ensure that code	software and applications	Northern Kentucky University
accord officiently	functions correctly	function property	Northern Kentdeky Oniversity
accessed eniciently.	functions correctly.	runction property.	Commuter Colones LIV
0	Demoister and Detion of	O - II - h - m - the m - Effer a three	Computer Science-OK
Computer Programmer:	Persistence and Patience:	Collaboration: Effective	
Writes and tests code that	Programming often involves	communication is crucial for	Computer Science - University
allows software programs to	trial and error. Being persistent	understanding project	<u>of Louisville</u>
function.	and patient helps in	requirements and delivering	
	overcoming challenges.	solutions.	Computer Science-Western
IT Support Specialist: Provides			Kentucky University
technical support to users,	Creativity: The ability to think	Technology: They use various	
helping them troubleshoot and	creatively can help in designing	programming languages and	
resolve software and hardware	innovative solutions and writing	tools to develop software.	
issues.	efficient code.	Staving updated with the latest	
		technologies and programming	
Network Administrator:	Communication Skills:	trends is essential	
Manages and maintains an	Effective communication both		
organization's computer	written and verbal is important	Challenges: The job can be	
notworko	for collaborating with toom	stressful due to tight deadlines	
networks.		stressful due to light deadlines	
Outhouse equity Amelyate	members.		
Cybersecurity Analyst:		Programmers must be detait-	
Protects an organization's	lechnical Literacy: Familiarity	oriented and capable of solving	
computer systems and	with basic computer	complex problems.	
networks from cyber threats	operations and software tools		
	is beneficial.	Flexibility: Many programming	
Game Developer: Designs and		roles offer flexibility in terms of	
creates video games for various	Self-Motivation and Curiosity:	work hours and location,	
platforms.	A strong interest in technology	especially with the rise of	
	and a desire to remain current	remote work.	
Machine Learning Engineer:	on the latest technology.		
Develops algorithms and			
models that enable machines			
to learn and make decisions.			

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
	·		in Kentucky
Information Security Analyst:	Analytical Thinking: The ability	Dynamic and Fast-Paced:	KCTCS Campuses
Protects an organization's	to analyze complex problems	Cybersecurity professionals	
computer networks and	and identify potential solutions	often work in a fast-paced	Cybersecurity   BCTC
systems by monitoring security	is crucial in cybersecurity.	environment where they need	
breaches, investigating		to respond quickly to emerging	Cybersecurity   KCTCS
incidents, and developing	Attention to Detail:	threats and incidents.	
security strategies.	Cybersecurity professionals		University Programs
	need to notice small details	Collaborative: Many	
Cybersecurity Engineer:	that could indicate security	cybersecurity roles involve	Cybersecurity   Stanley and
Designs and implements	breaches or vulnerabilities.	working closely with other IT	Karen Pigman College of
secure network solutions to		professionals, management,	Engineering
defend against hackers,	Technical Proficiency: A	and sometimes even law	
cyberattacks, and other	strong foundation in computer	enforcement to ensure	Cybersecurity - J.B. Speed
persistent threats.	science, including knowledge	comprehensive security	School of Engineering -
	of programming languages,	measures.	University of Louisville
Penetration Tester (Ethical	networking, and operating		
Hacker): Simulates	systems, is essential.	Problem-Solving Focused:	Cybersecurity Major: Northern
cyberattacks to identify and fix		The job often requires a lot of	Kentucky University
security vulnerabilities.	Problem-Solving Skills: The	problem-solving and critical	
	ability to think critically and	thinking to identify	Cybersecurity Degree   Network
Security Consultant: Advises	creatively to solve security	vulnerabilities and develop	Management   Murray State
organizations on how to protect	issues is highly valued.	effective security strategies.	
their IT infrastructure and data			Master of Science in
from cyber threats.	Curiosity and Continuous	Continuous Learning:	Cybersecurity Data Analytics
	Learning: Cybersecurity is a	Cybersecurity is a constantly	Western Kentucky University
Incident Responder:	constantly evolving field, so a	evolving field, so professionals	
Responds to security breaches	willingness to stay updated	need to stay updated with the	Bachelor of Science in Digital
and cyberattacks.	with the latest trends and	latest trends, technologies, and	Forensics & Cybersecurity -
	technologies is important.	threat landscapes.	Eastern Kentucky University
Security Architect: Designs			
and builds secure systems and	Communication Skills: Being	High Responsibility: Given the	
networks.	able to explain complex	importance of protecting	
	technical issues to non-	sensitive data and systems,	
Chief Information Security	technical stakeholders.	cybersecurity roles come with a	
Officer (CISO): Oversees an		high level of responsibility and	
organization's entire	Ethical Mindset: A strong	sometimes stress.	
information security strategy	sense of ethics and		
and team.	responsibility is crucial, as	Flexible Work Arrangements:	
	cybersecurity professionals	Many cybersecurity jobs offer	
	often handle sensitive	flexible work arrangements,	
	information.	including remote work options.	

#### 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Career Choices Data Journalist: Uses and examines statistics to provide objective and in-depth reporting and news writing. They use programming to automate the process of gathering and combining information. Data Analyst: Modifies company or industry data to perform analyses that answer specific business questions. They primarily use programming languages and frameworks to review data and make inferences. Statistical Analyst: Collects and examines data from various sources. They use visualization and business intelligence tools to communicate their findings to decision-makers at an organization. Computer Systems Analyst: Inspects a commany's	Aptitudes Needed Mathematical Proficiency: A strong foundation in mathematics, particularly in algebra, calculus, and statistics. Programming Skills: Ability to learn programming languages such as Python, R, or Java is crucial. Analytical Thinking: The ability to think critically and analytically is important for interpreting data. Problem-Solving Skills: Data science involves solving complex problems. Attention to Detail: Precision and accuracy are vital when working with data to ensure the validity and reliability of results. Curiosity and Eagerness to Learn: A natural curiosity and a willingness to continuously learn and adapt to new	Common Work Environments Collaborative Atmosphere: Data analysts often work closely with other team members, including data scientists, business analysts, and IT professionals. Office Setting: Most data analysts work in an office environment, though remote work is becoming more common. Full-Time Hours: The majority of data analysts work full-time, with some positions requiring occasional overtime to meet deadlines. Attention to Detail: The role requires a high level of accuracy and attention to detail, as small errors can significantly impact the results. Mild Stress Levels: While the job can involve some time pressure, it is generally not considered highly stressful	Postsecondary Opportunities in Kentucky         KCTCS Campuses         Computer and Information Technology   KCTCS         University Programs         UK-Statistics and Data Science         Data Science Major: Northern Kentucky University         Bachelor of Science in Business Data Analytics   Western Kentucky University         Bachelor of Science in Data Science & Statistics - Eastern Kentucky University
communicate their findings to decision-makers at an organization. Computer Systems Analyst: Inspects a company's computer systems to assess their efficiency and determine whether they align with business needs and goals.	validity and reliability of results. <b>Curiosity and Eagerness to</b> <b>Learn:</b> A natural curiosity and a willingness to continuously learn and adapt to new technologies and methodologies are important. <b>Communication Skills:</b> The ability to communicate findings	significantly impact the results. <b>Mild Stress Levels</b> : While the job can involve some time pressure, it is generally not considered highly stressful. <b>Limited Creativity:</b> The work is often structured and may not allow for much creative expression.	
	clearly and effectively, both in writing and verbally, is essential. <b>Teamwork</b> : Data science projects often require collaboration with others, so being able to work well in.	<b>Continuous Learning:</b> Data analysts need to stay updated with the latest tools and techniques in data analysis, which involves continuous learning.	

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities
			іп кептиску
Game Designer: Responsible	Creativity: The ability to think	Work Environment: The work	KCTCS Campuses
for creating the concepts,	outside the box and come up	environment can range from	
storylines, characters, and	with innovative ideas for game	relaxed and flexible to intense	BCTC-Video Game Design
gameplay mechanics of a	concepts, characters, and	and demanding, depending on	
game.	storylines.	the studio and project. Some	Graphic Design   BCTC
		studios may have a more laid-	
Developer/Programmer:	Problem-Solving Skills: The	back atmosphere, while others	University Programs.
Focuses on writing the code	capacity to tackle challenges	might have periods of "crunch	Computer Science-Eastern
that brings the game to life,	and find solutions.	time" with long hours.	Kentucky University
ensuring it runs smoothly and			Game Content Design, Minor
efficiently.	Technical Skills: A basic	Creativity and Innovation: The	Eastern Kentucky University
	understanding of programming	work environment is often	
Game Animator: Uses	languages as well as familiarity	vibrant and fast-paced, with a	Visual Arts, Bachelor of Fine
specialized software to create	with game development tools	strong emphasis on creativity	Arts Western Kentucky
visual elements and	and software.	and innovation.	<u>University</u>
animations in a game.			
	Artistic Skills: Proficiency in	Team Collaboration: You'll	
Level Designer: Designs the	drawing, graphic design, and	work closely with a diverse	
levels or stages of a game,	animation can be very	team of professionals,	
creating engaging and	beneficial for creating visual	including artists, programmers,	
challenging environments for	elements of games.	writers, and sound designers.	
players.			
	Attention to Detail: The ability	Varied Daily Tasks: Your daily	
Audio Engineer: Creates the	to notice and correct small	tasks can vary greatly	
sound effects, music, and	errors in code, design, or	depending on the stage of	
audio elements.	gameplay mechanics.	development. This can include	
		concept development, creating	
Quality Assurance Tester:	Teamwork and Collaboration:	design documents, building	
Tests games for bugs and	Many game development	prototypes, and testing game	
issues, ensuring they meet	projects require working in	features.	
quality standards.	teams.		
		Challenges and Rewards: The	
Technical Support Specialist:	Time Management: The ability	industry can be challenging,	
Provides support to players	to manage time effectively to	with tight deadlines and high	
experiencing technical issues	meet deadlines and balance	expectations. However, it can	
with games.	multiple tasks.	also be highly rewarding.	
User Interface (UI) Designer:	Passion for Gaming: A genuine	Continuous Learning: Staying	
Designs the menus, buttons,	interest in video games and a	up to date with industry trends,	
and overall interface.	desire to learn about the	emerging technologies, and	
	industry.	player preferences is essential.	
Narrative Designer: Develops			
the storylines, dialogues, and	Storytelling Skills: The ability		
narrative elements of a game.	to create engaging narratives		
	and characters.		
Game Producer: Manages the			
game production process.	Adaptability: The willingness		
	to learn new tools,		
	technologies, and techniques.		

# 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.

Career Choices	Aptitudes Needed	<b>Common Work Environments</b>	Postsecondary Opportunities
			in Kentucky
Help Desk Analyst: Provide	Technical Skills: A strong	Office and Remote Settings:	KCTCS Campuses
technical support to customers	interest in and understanding	You may work in a traditional	
or colleagues, troubleshooting	of computers, software, and	office setting or remote,	Computer and Information
and resolving IT issues.	technology is essential.	depending on the organization.	Technology   KCTCS
Computer Support Specialist:	Problem-Solving Abilities: The	Team Collaboration: You'll	University Programs
Assist users with computer	ability to analyze issues, think	often collaborate with other IT	
problems and provide support	critically, and develop effective	professionals, such as network	Information Technology:
for software and hardware.	solutions is crucial.	administrators, software	Northern Kentucky University
		developers, and system	
Network Technician: Maintain	Communication Skills: Good	analysts.	UK-Bachelor's in ICT
and troubleshoot network	verbal and written		
systems, ensuring connectivity	communication skills are	Problem-Solving Focus: The	Bachelor of Science in
and security.	important for explaining	work environment is centered	Management Information
<b>.</b>	technical information clearly to	around troubleshooting and	Systems - Eastern Kentucky
Database Administrator:	non-technical users and	problem-solving. You'll be	University
Manage and maintain	collaborating with team	diagnosing and fixing technical	Kanta la Otata Universita I
databases, ensuring data	members.	Issues.	<u>Kentucky State University  </u>
integrity, security, and	Attention to Details Descision	Questo more internentions.	Computer Information
availability.	Attention to Detail: Precision	Customer Interaction:	Systems Option
Sustama Analyst Analyza and	and accuracy are vitat when	eignificant part of the job. This	
design information systems to	and data	involves communicating with	
help organizations operate		customers or colleagues to	
more efficiently	Patience and Empathy:	understand their issues and	
more enciency.	Providing support often	guide them through solutions	
IT Project Manager: Oversee IT	requires nationce and	guide them through solutions.	
projects ensuring they are	understanding especially	Access to Tools and	
completed on time within	when dealing with frustrated	Resources: You'll have access	
budget, and meet the required	Users.	to various hardware and	
standards.		software tools necessary for	
	Organizational Skills: Being	diagnosing and resolving	
Technical Support Specialist:	organized helps in managing	technical problems.	
Provide advanced technical	multiple tasks, keeping track of		
support and solve complex IT	issues, and maintaining	Structured Environment: A	
issues.	documentation.	well-organized workspace is	
		crucial for efficiency. Proper	
Information Systems	Continuous Learning: A	infrastructure, reliable	
Manager: Manage an	willingness to learn and adapt	hardware, and robust network	
organization's IT infrastructure,	to new technologies and	systems support your work.	
including hardware, software,	methods.		
and networks.		Stress and Time Pressure: The	
		job can sometimes be	
		stressful, especially when	
		dealing with urgent issues or	
		tight deadlines.	

#### 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 security concerns; and work within the ethical/professional parameters in the field of network administration.

Career Choices	Antitudes Needed	Common Work	Postsecondary
Career Choices	Aplitudes Needed	Environments	Opportunities in Kentucky
Network Administrator:	Basic Computer Literacy:	Work Environment: Network	KCTCS Campuses
Besponsible for managing and	Understanding how to use	administrators typically work	Koree oumpuses
maintaining an organization's	computers and common	in office settings, but remote	Computer and Information
computer networks, ensuring	software applications.	work is also possible. They are	Technology   KCTCS
they run smoothly and		employed by a variety of	<u></u>
efficiently.	Basic Networking Concepts:	organizations, including IT	University Programs
	Understanding of fundamental	firms and schools.	
Network Engineer: Focuses	networking principles, such as		O
on designing and	IP addressing, subnetting, and	Hours: Most network	Computer Science, Morenead
implementing network	network topologies.	administrators work full-time,	State University
solutions.		with a standard 40-hour work	
	Problem-Solving: Ability to	week. However, they may need	Computer Science (CSC)
Systems Administrator:	troubleshoot and resolve	to work evenings, nights, or	Murray State
Manages and supports the	technical issues.	weekends to monitor,	Computer Science Festern
overall IT infrastructure,		maintain, or update networks	Computer Science-Eastern
including servers, networks,	Attention to Detail: Precision	and systems.	<u>Kentucky Oniversity</u>
and storage systems	in configuring and maintaining		Computer Science Majori
3 ,	network systems.	Tasks: Their daily tasks	Computer Science Major:
IT Support Specialist:		include installing, configuring,	Northern Kentucky Oniversity
Provides technical support to	Basic Math: Comfortable with	and maintaining network	Computer Science LIK
users, resolving network-	basic arithmetic and algebra,	hardware and software. They	Computer Science-OK
related issues and assisting	which are often used in	also monitor network	Computer Science University
with hardware and software	network calculations and	performance, troubleshoot	computer science - oniversity
problems.	configurations.	issues, and ensure network	<u>or Louisville</u>
	5	security.	Computer Science Western
Network Security	Verbal and Written	-	Kentucky University
Administrator: Specializes in	Communication: Ability to	Collaboration: Network	<u>Rentacky Oniversity</u>
protecting an organization's	explain technical concepts	administrators often	
network from cyber threats.	clearly to non-technical users	collaborate with other IT	
	and document procedures	professionals to ensure the	
Cloud Network	effectively.	smooth operation of the	
Administrator: Manages		organization's network.	
cloud-based network services,	Curiosity and Willingness to		
ensuring they are properly	Learn: Eagerness to stay	Technology: They use various	
configured and secure.	updated with the latest	tools and technologies to	
Network administration	technological trends and	manage networks, including	
	advancements.	network monitoring software	
		and security tools. Staying	
	Patience and Perseverance:	updated with the latest	
	Ability to remain patient and	networking technologies and	
	persistent when	best practices is crucial.	
	troubleshooting complex		
	issues.	Challenges: The job can be	
		stressful due to the need for	
	Teamwork: Ability to work well	rapid response to network	
	with others.	issues and the constant threat	
		of cyber-attacks. Network	
	Organizational/Time	administrators must be detail-	
	Management: Ability to	oriented and analytical.	
	prioritize tasks and manage		
	time effectively.	Flexibility: While many roles	
		offer flexibility in terms of work	
		nours and location, the need	
		for on-call availability can limit	
		this flexibility.	1

#### 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.

			<b>.</b>
Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Network Security Specialist:	Analytical Thinking: The	Office Setting: Many network	KCTCS Campuses
These professionals are	ability to analyze complex	security professionals work in	
responsible for protecting an	problems and identify	traditional office settings,	Cybersecurity   BCTC
organization's network from	potential security threats.	often within IT departments of	
cyber threats by implementing		organizations.	Cybersecurity   KCTCS
security measures and	Attention to Detail: Network		
monitoring network traffic.	security requires meticulous	Remote Work: Many network	University Programs
	attention to detail to spot	security roles can be	
Security Analyst: Security	vulnerabilities and ensure	performed from home or other	Cybersecurity   Stanley and
analysts monitor networks for	systems are secure.	remote locations.	Karen Pigman College of
security breaches, investigate			Engineering
incidents, and implement	Problem-Solving Skills: Being	High-Pressure Situations:	
security measures to protect	able to think critically and	Network security	Cybersecurity - J.B. Speed
data.	solve problems efficiently is	professionals often deal with	School of Engineering -
	essential for addressing	high-pressure situations,	University of Louisville
Penetration Tester (Ethical	security issues.	especially during security	-
Hacker): Penetration testers	,	breaches or cyberattacks.	Cvbersecurity Maior: Northern
simulate cyberattacks to	Technical Proficiency: A		Kentucky University, Greater
identify vulnerabilities in an	strong foundation in computer	Continuous Learning: The	Cincinnati Region
organization's network and	science, including knowledge	field of network security is	
recommend improvements.	of operating systems.	constantly evolving, so	Cybersecurity Degree I
· · · · · · · · · · · · · · · · · · ·	networking, and programming.	professionals need to stav	Network Management   Murray
Security Consultant: Security	, , , , , , , , , , , , , , , , , , ,	updated with the latest	State
consultants advise	Curiosity and Continuous	technologies, threats, and	
organizations on best	Learning: The field of network	best practices.	Master of Science in
practices for securing their	security is constantly evolving.	2000 practiceer	Cybersecurity Data Analytics
networks and help design and	so continued learning is	Team Collaboration: Network	Western Kentucky University
implement security solutions	essential	security often requires working	<u>Hootom Rondoky Onivoloky</u>
imptomont occurry octations.	ooonnaa	closely with other IT	Bachelor of Science in Digital
Network Security Engineer:	Communication Skills:	professionals security	Forensics & Cybersecurity -
These engineers design	Effective communication is	analysts and sometimes	Fastern Kentucky University
implement and maintain	necessary to explain security	external consultants	Luston Kontuoky Oniversity
secure network infrastructure	issues and solutions to non-	externat consultants.	
including firewalls VPNs and	technical stakeholders	On-Call Duties: Depending on	
intrusion detection systems		the organization you might be	
intrusion detection systems.	Ethical Mindset: A strong	required to be on call outside	
Incident Responder: Incident	sense of ethics and	of regular working hours to	
responders are the first line of	responsibility is vital	respond to security incidents	
defense during a syberetteck	responsibility is vitat.	or omorgonoion	
responsible for identifying	Teamwork: Callaboration with	of efficies.	
responsible for identifying,	ather IT professionals and		
containing, and mugating	deportmente is often required	Use of Advanced Tools: You it	
security incidents.	departments is orten required	work with a variety of security	
Chief Information Security	monouron	as firewalla, intrusion	
	medsules.	as mewans, mirusion	
		uetection systems, and	
senior executives responsible		security information and event	
ior an organization's overall		management (SIEM) systems.	
information security strategy			
and management.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Front-End Developer: Focuses on	Problem-Solving Skills: The	Office Setting: Many web	Computer and Information
the visual aspects of a website,	ability to troubleshoot and	developers and administrators	Technology   KCTCS
interface.	solve technical issues.	work in traditional office	
		settings, often within IT	University Programs
Back-End Developer: Handles the	Attention to Detail: Precision	departments or digital	
server-side logic, databases, and	is important when writing code	agencies.	Computer Science, Morehead
application integration.	and managing websites.		State University
Full-Stack Developer: Combines		Remote Work: Many web	
the skills of both front-end and	Creativity: A creative mindset	development roles can be	Computer Science (CSC)
back-end developers, capable of	netps in designing visually	performed from nome or other	Murray State
handling all aspects of web	appealing and user-mendly	remote locations.	
development.	websites.	Project Recod Work: Wab	Computer Science-Eastern
Web Designer: Specializes in the	Technical Proficiency: A	development often involves	Kentucky University
visual design of websites, focusing	strong foundation in computer	working on specific projects	
on aesthetics, layout, and user	science including knowledge	with defined goals and	Computer Science Major:
experience.	of HTML CSS JavaScript and	deadlines	Northern Kentucky University
	other programming languages.	doddinos.	
Web Administrator: Manages and		Continuous Learning: The	Computer Science-UK
maintains websites, ensuring they	Analytical Thinking: The	field of web development is	
running smoothly.	ability to analyze user needs	constantly evolving, so	Computer Science - University
	and design solutions that meet	professionals need to stay	<u>or Louisville</u>
UX/UI Designer: Focuses on user	those needs is essential.	updated with the latest	Computer Science Western
experience (UX) and user interface		technologies, frameworks, and	<u>Computer Science-Western</u>
(UI) design, ensuring that websites	Communication Skills:	best practices.	<u>Rendery Oniversity</u>
friendly.	Effective communication is		
	necessary to collaborate with	Team Collaboration: Web	
Web Content Manager:	team members and clients	development and	
Responsible for creating, editing,		administration require working	
and managing the content on a	Curiosity and Continuous	closely with other team	
website.	Learning: The field of web	members.	
SEO Specialist: Optimizes	development is constantly		
websites to rank higher in search	evolving, so a willingness to	Problem-Solving: You'll	
engine results, increasing visibility	learn new technologies and	frequently encounter and need	
and traffic.	stay updated with industry	to solve technical issues	
Web Project Manager: Oversees	trends is important.		
web development projects.	Time Management: The ability	Use of Advanced Tools: You II	
	to manage time effectively and	development tools and	
E-commerce Specialist: Focuses	meet deadlines is crucial	technologies, such as version	
on developing and managing	especially when working on	control systems (e.g. Git)	
shopping experience for	multiple projects.	content management systems	
customers.		(e.g., WordPress). and various	
	Teamwork: Collaboration with	programming languages and	
	other developers, designers,	frameworks.	
	and stakeholders is often		
	required to complete projects		
	successfully.		

# **CONSTRUCTION TECHNOLOGY**

#### 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
HVAC Technician:	Mechanical Aptitude:	Indoor and Outdoor	KCTCS Campuses
Specializes in installing,	Understanding how	Settings: You may work in	
maintaining, and repairing	machines and systems	both indoor and outdoor	Environmental Control
heating, ventilation, and air	work is crucial for	environments, depending	System Servicer -
conditioning systems.	diagnosing and repairing	on the specific job.	Certificate KCTCS
	environmental control		
Environmental Control	systems.	Physical Demands: The	Apprenticeships
Engineer: Focuses on		job can be physically	
designing and	Problem-Solving Skills:	demanding, requiring you	Registered
implementing systems that	The ability to troubleshoot	to lift heavy equipment,	Apprenticeships - Kentucky
control environmental	and solve technical issues.	climb ladders, and work in	Works
conditions.		confined spaces. Good	
	Attention to Detail:	physical fitness and	University Programs
Building Automation	Precision is important	stamina are important.	(While most Environmental
Technician: Works with	when working with		Control System Technician
automated systems that	complex systems to ensure	Exposure to Hazards: You	programs in Kentucky are
control building	they operate correctly and	may be exposed to various	offered through community
environments, including	safely.	hazards, such as electrical	and technical colleges,
HVAC, lighting, and		components, chemicals,	there are also related
security systems.	Iechnical Proficiency: A	and extreme temperatures.	programs at universities
Frank Managamant	strong loundation in	Technical and Decision	that can provide a strong
Energy Management	subjects like mathematics,		foundation in this field.)
monogoo opergy upogo in	physics, and computer	working with complex	LIK Machanical
huildings to optimize	science is beneficial.	working with complex	
officioney and roduce	Analytical Thinking: The	procision and attention to	Eligineening
	ability to analyze data and	detail	Mechanical Engineering
00010.	system performance	uotan.	(ME) < Western Kentuchy
Environmental Services	system performance.	Team Collaboration: You	University
Technician: Besponsible	Communication Skills:	may work as part of a	Oniversity
for maintaining and	Effective communication is	team collaborating with	Engineering Physics at
improving environmental	necessary to explain	other technicians	Murray State
conditions.	technical issues and	engineers, and facility	<u>Handy otato</u>
	solutions.	managers.	
Critical Environment			
Technician: Works in data	Curiosity and Continuous	Variable Hours:	
centers or other critical	Learning: The field is	Depending on the	
environments to ensure	constantly evolving, so a	employer, you might work	
that environmental control	willingness to learn new	standard business hours or	
systems are functioning	technologies and stay	have shifts that include	
properly.	updated with industry	evenings, weekends, and	
	trends is important.	on-call duties.	
	-		

## 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.

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Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Residential Maintenance	Manual Dexterity: The	Physical Demands: The	KCTCS Campuses
Professional: This role	ability to work with hands	job often involves physical	
involves performing	efficiently and skillfully.	labor, including lifting	Construction Technology
maintenance and repair		heavy materials, bending,	<u>KCTCS</u>
tasks in residential	Attention to Detail:	kneeling, and standing for	
properties.	Precision is important	long periods.	University Programs
	when effecting repairs of		
Carpenter Assistant:	building anything,	Tools and Equipment:	Construction
Working under the		They use a variety of hand	Management: Northern
supervision of experienced	Problem-Solving Skills:	and power tools, such as	Kentucky University
carpenters, you'll assist	Being able to troubleshoot	saws, drills, sanders, and	<u></u>
with various carpentry	and find solutions to	chisels.	Bachelor of Science in
tasks, including	various maintenance		Construction Management
construction, repair, and	issues is essential.	Work Environment: They	- Eastern Kentucky
installation.		may work indoors or	- Lastern Kentucky
	Basic Math Skills:	outdoors, depending on	Onversity
Maintenance Technician:	Understanding	the project. Working at	Construction Management
In this position you'll	measurements geometry	heights on ladders or	
handle a range of	and basic arithmetic is	scaffolding is common	<u>I vvestern kentucky</u>
maintenance duties from	necessary for accurate		Oniversity
fixing nlumbing issues to	construction and renairs	Safety: Ensuring	
electrical renairs	construction and repairs.	compliance with safety	
eteetheat repairs.	Physical Stamina:	regulations and using	
Property Maintenance	Carpentry and	protective gear like gloves	
Worker: This job involves	maintenance work can be	goggles and masks is	
maintaining the overall	nhysically demanding so	assential	
condition of residential	good physical condition is	costinut.	
properties	beneficial	Tasks: Responsibilities	
properties.	benenelat.	include assisting with	
Facilities Maintenance	Communication Skills:	measurements cutting	
Technician: Working in	Must be able to understand	lumber painting prep	
larger residential	instructions and	project setup, and cleanup	
complexes or commercial		project cotup, and oteanap.	
buildings you'll be	with team members and		
responsible for maintaining	clients		
the facilities	ouonio		
	Technical Antitude:		
Handyman: Offering a	Familiarity with tools		
wide range of renair and	equipment and basic		
maintenance services this	construction techniques is		
role allows for flexibility	helpful		
and variety in the types of			
tasks you perform			
tasks you perform.			

### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
Architactural Engineers	Mathematical Skiller	Office Work: Much of their	
Design and oversee the	Hadnematical Skitts.	time is spont in offices	KCTCS Campuses
construction of buildings	doomotry and	where they develop plans	Architactural Tachnology
construction of buildings.	trigonomotry is assortial	most with clients, and	KOTOS
Construction Project	Calculus and physics can	consult with onginoors and	<u>KCTCS</u>
Manager: Plan coordinate	also be very beinful	other architects They use	University Programs
and oversee construction		computer software for	
projects from start to	Analytical Thinking: Ability	design budgeting and	Construction
finish	to analyze complex	project management	Management: Northern
IIIISII.	problems and develop	project management.	Kontucky University
Building Services	problems and develop	Site Visite: They frequently	<u>Rendery Oniversity</u>
Engineer: Design and		visit construction sites to	Bachalor of Science in
install assortial systems	Technical Drawing: Ability	inspect progress, onsure	Construction Management
within buildings	to loarn how to uso	compliance with	<u>Construction Management</u>
within buildings.	to team now to use		- Edstern Kentucky
Structural Engineers	design software	addross any issues that	Oniversity
Structural Engineer.	design software.		Construction Management
Pocus of huilding	Communication Skiller	anse.	
	Effective verbal and written	Physical Domanda, Sita	
structures.	enective verbat and written	visite con involve welking	Oniversity
Construction Estimators	communication skills are	olimbing and standing for	LIK Architecture
Dranara aget actimator	with team members and	cumbing, and standing for	<u>OK-AICHILECLUIE</u>
Prepare cost estimates for	with team members and	extended periods. They	
construction projects.	presenting ideas.	nay need to wear	
Custoinskilitu	Attention to Details	protective gear like hard	
Sustainability	Attention to Detail:	hats and boots .	
consultant: Advise on	beth design and	Collaboration: Thousand	
practices.	construction phases.	closely with various	
Pacifices Manager:	thinking to design		
Oversee the maintenance	thinking to design	experts, and code	
and operation of buildings.	functional and	enforcement officials.	
	aesthetically pleasing	Manual Language Theories in the second	
Urban Planner: work on	structures.	work Hours: The Job can	
the development and	Time Managamanti Strang	require long nours,	
planning of urban areas,	argenizational akilla to	especially when deadlines	
and anging architecturat	organizational SKIIIS to		
and engineering principles.	manage multiple tasks and		
	meet deadines.		
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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.

Career Choices	Antitudes Needed	Common Work	Postsecondary
Gareer Gildices	Aplitudes Needed	Environments	Opportunities in Kentucky
Structural Engineer: Design and	Mathematical Proficiency:	Office Work: Structural	KCTCS Campuses
analyze buildings, bridges, and	Strong skills in algebra.	engineers spend a significant	
other structures.	geometry, trigonometry,	amount of time in offices.	Architectural Technology
	calculus, physics, &	where they design structures,	KCTCS
Civil Engineer: Work on broader	mechanics.	create blueprints, and use	
infrastructure projects, including		software for simulations and	University Programs
roads, dams, and water supply	Analytical Thinking: Ability to	calculations. They also meet	
systems.	analyze complex problems.	with clients, architects, and	UK-Civil Engineering
		other engineers to discuss	
Project Engineer: Manage	Attention to Detail: Precision	project details .	Civil & Environmental
specific aspects of construction	is vital in structural		Engineering-University of
projects.	engineering.	Site Visits: Regular visits to	Louisville
		construction sites are	
Consulting Engineer: Provide	Technical Drawing Skills:	essential to inspect the	Civil Engineering, Bachelor of
expert advice on structural	Familiarity with technical	progress, ensure compliance	Science, Western Kentucky
Integrity, safety, and compliance.	drawing and design software.	with design specifications,	University
Research and Dovelopment	Communication Skiller Clear	and address any issues that	Department of Engineering 8
Engineer: Work on developing	verbal and written	anse.	Technology - Eastern Kentucky
new materials construction	communication	Physical Demands: Site visits	University
techniques, and technologies.	communication.	may require wearing protective	onvoisity
	Creativity and Innovation:	gear such as hard hats, safety	
Forensic Engineer: Investigate	Ability to design functional and	glasses, and boots. Engineers	
structural failures and accidents	visually appealing structures	need to be prepared for	
to determine causes and	creatively.	various weather conditions	
recommend improvements		and the physical demands of	
	Teamwork: Ability to work well	navigating active construction	
Building Inspector: Ensure that	with both internal & external	sites.	
construction projects are	partners.		
compliant.		Collaboration: Structural	
	Time Management: Good	engineers work closely with	
Teaching: Teach in secondary and	organizational skills to manage	other professionals, including	
postsecondary institutions and	multiple tasks and meet	architects, contractors, and	
conduct research	deadlines efficiently.	other engineers, to ensure that	
	Broklom Solving Skillor	all aspects of the project are	
	Ability to think critically and	standards	
	address unexpected	stanuarus.	
	challenges effectively	Problem-Solving: They often	
		encounter challenges that	
		require critical thinking and	
		problem-solving skills.	
		Work Hours: The job can	
		involve long hours, especially	
		when deadlines are	
		approaching or when	
		unexpected issues arise on-	
		site.	

#### 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.

Osvesv Obsisse	Antitudes Needed	Oommon Work	Destesses dem
Career Choices	Aptitudes Needed		Postsecondary
		Environments	Opportunities in Kentucky
Electrical Engineer: Design,	Mathematical Proficiency:	Office Work: Engineers spend	KCTCS Campuses
develop, and maintain	Strong skills in algebra,	time in offices designing	
electrical systems and	geometry, trigonometry, and	electrical systems, creating	Electrical Engineering
components for buildings.	calculus.	blueprints, and using software	<u>Iechnology - Certificate &lt;</u>
		for simulations and	KCTCS
Construction Project	Analytical Thinking: Ability to	calculations. They also meet	
Manager: Oversee electrical	analyze complex problems	with clients, architects, and	University Programs
aspects of construction	and develop solutions.	other engineers.	
projects.			<u>Electrical Engineering, UK</u>
	Attention to Detail: Precision	Site Visits: Regular visits to	
Electrical Design Engineer:	is vital in electrical engineering	construction sites are	Electrical & Computer
Create detailed electrical	to ensure safety and accuracy	essential to inspect progress,	<u>Engineering (Dept) - University</u>
plans and schematics for		ensure compliance with	<u>of Louisville</u>
construction projects.	Technical Skills: Familiarity	design specifications, and	
	with electrical circuits, wiring,	address any issues that arise.	Electrical Engineering-Western
Field Engineer: Work on-site	and design software.		Kentucky University
to install, test, and		Physical Demands: Site visits	
troubleshoot electrical	Communication Skills:	may require wearing protective	Electrical and Electronics
systems and equipment.	Effective verbal and written	gear such as hard hats, safety	Engineering-NKU
	communication skills are	glasses, and boots. Engineers	
Maintenance Engineer:	important.	need to be prepared for	Department of Engineering &
Ensure the ongoing operation	-	various weather conditions	Technology - Eastern Kentucky
and safety of electrical	Creativity and Innovation:	and the physical demands of	University
systems in buildings and	Ability to think creatively to	navigating active construction	
facilities.	design innovative systems.	sites.	
	5		
<b>Ouality Control Engineer:</b>	Teamwork: Strong ability to	Safety Concerns: Electrical	
Monitor and inspect electrical	work well in a team, as	engineers must be vigilant	
installations.	electrical construction	about safety, as they work with	
	projects often require	live wires, electrical systems.	
Systems Engineer: Design	collaboration.	and equipment.	
and integrate complex		and equipments	
electrical systems	Time Management: Good	Collaboration: They work	
	organizational skills to manage	closely with other	
Technical Sales Engineer:	multiple tasks and meet	professionals including	
Provide technical support and	deadlines efficiently	contractors electricians and	
sales expertise for electrical	deddines enrolentty.	safety inspectors to ensure	
producto	Problem Solving Skiller	that all appears of the project	
products:	Ability to think oritically and	are accordinated and most	
Conculting Engineers Offer	Address upsynasted	ale cooluliated and meet	
consutting Engineer. Oner		salety stallualus.	
expert advice of electricat	chattenges enectively.	Broklom Solving Engineero	
systems and imastructure.		often encounter challenges	
		thet require critical thinking	
		that require childat thinking	
		and problem-solving skills.	
		Mark Hannes The Sets and	
		work Hours: The job can	
		involve long nours, especially	
		when deadlines are	
		approaching or when	
		unexpected issues arise on-	
		site.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
Induction Flootnicions Montein	Mathematical Skiller A solid	Environments	Opportunities in Kentucky
footorioo monuto sturing	Mathematical Skills: A solid	Physical Demands: The Job	KCTCS Campuses
plants, and other industrial	including algebra and	equipment climbing lodders	Industrial Electrician Level L
facilities handling complex	doomotry	and working in confined	Cortificate < KCTCS
alostrical systems and	geometry.		Certificate < KCTCS
machinery	Technical Antitude: Comfort	to bend squat or kneel	Electrical Technology < KCTCS
machinery.	with using tools and	frequently to make	
Electrical Maintenance	technology as well as an	connections in awkward	
Technician: Focus on	interest in how things work	locations	
maintaining and renairing	interest in new trings work.		
electrical systems in large	Problem-Solving Skills: The	Safety Concerns: Working	
facilities like hospitals	ability to troubleshoot and	with live electrical systems	
schools and retail buildings	think critically to diagnose and	noses risks such as electrical	
sonoolo, and rotalt baltanigo.	fix electrical issues.	shocks, arc flashes, and	
Construction Electrician		electrical fires. Adhering to	
Helper: Assist experienced	Attention to Detail: Precision	safety protocols and using	
electricians in installing wiring	is key in electrical work to	personal protective equipment	
systems in new buildings and	ensure safety and	is crucial.	
renovation projects.	functionality.		
		Work Environment: They may	
Residential Electrician	Physical Dexterity: Good	work indoors in industrial	
Assistant: Work alongside	hand-eye coordination and	facilities or outdoors on	
residential electricians on	manual dexterity.	construction sites. The	
tasks like wiring, repairing		environment can be noisy,	
electrical systems, and	Communication Skills: Being	dusty, and subject to varying	
installing circuit breakers in	able to effectively	weather conditions .	
homes and apartments.	communicate with team		
	members and supervisors.	Tools and Equipment:	
Electrical Installer:		Assistants use a variety of	
Specialize in installing	Safety Awareness: A strong	hand and power tools,	
components for security	understanding of safety	including wire strippers, pliers,	
systems, lighting, and low-	protocols.	drills, and multimeters.	
voltage wiring in residential			
and commercial buildings3	Willingness to Learn: A	Collaboration: They work	
	proactive attitude towards	closely with industrial	
	learning new skills and staying	electricians, engineers, and	
	updated.	other construction	
		professionals to ensure	
		electrical systems are	
		installed and maintained	
		correctly.	
		work Hours: The Job can	
		involve long nours, especially	
		when deadlines are	
		approaching of when	
		site	
		รแต	

#### 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 nonbuilding 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	<b>Opportunities in Kentucky</b>
Heavy Equipment Operator:	Mechanical Aptitude: An	Physical Demands: Operating	KCTCS Campuses
Operate machinery such as	interest in and understanding	heavy equipment like cranes,	•
bulldozers, excavators, and	of how machines and engines	bulldozers, and excavators	Heavy Equipment Operation
loaders.	work.	involves significant physical	KCTCS
		effort. Workers may need to lift	
Heavy Equipment	Physical Stamina: Operating	heavy materials, climb into	
Technician: Maintain and	and maintaining heavy	and out of machinery, and	
repair heavy machinery.	equipment can be physically demanding.	work in confined spaces.	
Construction Equipment		Safety Concerns: The job	
Operator: Specialize in	Hand-Eye Coordination:	poses risks such as struck-by	
operating equipment used in	Precision in controlling	incidents, rollovers, and	
building roads, bridges, and	machinery and tools is	equipment malfunctions.	
other infrastructure.	essential for safety and	Adhering to safety protocols	
	efficiency.	and using personal protective	
Mining Equipment Operator:		equipment (PPE) is crucial.	
Work in mining operations,	Spatial Awareness: The ability		
using heavy machinery to	to understand and visualize	Work Environment: Workers	
extract minerals and other	spatial relationships.	may be exposed to noisy,	
resources.		dusty, and varied weather	
	Problem-Solving Skills: The	conditions. They often work	
Equipment Specialist:	ability to think critically and	outdoors on construction sites	
Provide technical support and expertise in the selection,	solve mechanical issues.	or indoors in industrial facilities.	
operation, and maintenance of	Attention to Detail: Being		
heavy equipment.	meticulous ensures that	Tools and Equipment: The job	
	machinery is operated safely	involves using a variety of	
Field Service Technician:		heavy machinery and tools,	
Travel to different job sites to	Technical Skills: Familiarity	including cranes, excavators,	
perform maintenance and	with basic tools and	loaders, and forklifts. Regular	
repairs on heavy equipment.	technology	maintenance and pre-	
		operation inspections are	
Equipment Sales	Safety Awareness: A strong	essential to ensure safety and	
Representative: Work for	understanding of safety	efficiency.	
equipment manufacturers or	protocols.		
dealers, selling heavy		Collaboration: Heavy	
machinery and providing	Communication Skills:	equipment operators work	
customer support and	Effective communication with	closely with other	
training.	learn members.	including site supervisors	
		safety inspectors and ground	
		workers to ensure projects are	
		completed safely and	
		efficiently.	
		Work Hours: The job can	
		involve long hours, especially	
		when deadlines are	
		approaching or when	
		unexpected issues arise on-	
		site.	
# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Bricklayer: Work on	Physical Stamina: Bricklaying	Physical Demands: The job	KCTCS Campuses
constructing and repairing	is physically demanding work	involves lifting heavy	
walls, floors, partitions, and	that requires strength and	materials, bending, kneeling,	Masonry (MSY) < KCTCS
other structures using bricks,	endurance.	and standing for long periods.	
stones, and other materials.		Assistants often work in	Big Sandy Community and
	Manual Dexterity: Good	confined spaces and at	Technical College
Masonry Worker: Assist in	hand-eye coordination and	heights on scaffolding.	
building and maintaining	fine motor skills are essential.		Bluegrass Community and
structures made of brick,		Safety Concerns: Working	Technical College
concrete blocks, and other	Attention to Detail: Precision	with tools like saws and mixers	
masonry materials.	is crucial in bricklaying to	poses risks such as cuts, falls,	Hazard Community and
	ensure structures are level,	and exposure to hazardous	Technical College
Construction Laborer:	plumb, and aesthetically	materials. Wearing protective	
Support construction projects	pleasing.	gear is essential.	Hopkinsville Community
by preparing sites,			College
transporting materials, and	Basic Math Skills:	Work Environment: Bricklayer	
assisting skilled tradespeople.	Understanding	assistants typically work	Jefferson Community and
	measurements, proportions,	outdoors, exposed to varying	Technical College
Scaffold Builder: Erect and	and basic geometry.	weather conditions. They may	
dismantle scaffolding to		also work indoors when	Maysville Community and
provide safe working platforms	Problem-Solving Skills: The	installing fireplaces or	Technical College
for construction workers.	ability to troubleshoot and find	industrial furnaces.	
	solutions to construction		Somerset Community
luckpointer: Specialize in	challenges.	lools and Equipment: The job	College
repairing and restoring the	On sticl Assessments of The shifts	Involves using various nand	O south a set Konstanting
mortar joints between bricks	Spatial Awareness: The ability	and power tools, including	Southeast Kentucky
or stones in existing	to visualize and understand	trowels, nammers, and mixers.	Community and lecrinical
structures.	spatial relationships.	Callabarations The suscept	College
Manager and the second s	To an an In Effer at it as	Collaboration: They work	We at Keinter las Ormanita
waterproofer: Apply	leamwork: Effective	closely with bricklayers and	west Kentucky Community
	communication and		and lechnical College
domoso	collaboration with other	professionals to ensure	
uamage.	important	and pafely	
	important.	and safety.	
	Sofaty Awaranasa: A strong	Work Hourse The job usually	
	understanding of safety	requires working 10 hours a	
	protocols	week but may include	
		weekends and holidays	
	Willingness to Learn: A	especially when deadlines are	
	proactive attitude towards	annroaching	
	learning new techniques	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Tuckpointer: Specialize in repairing and restoring the mortar joints between bricks or stones in existing structures. Waterproofer: Apply waterproofing materials to structures to prevent water damage.	<ul> <li>Solutions to construction challenges.</li> <li>Spatial Awareness: The ability to visualize and understand spatial relationships.</li> <li>Teamwork: Effective communication and collaboration with other workers and supervisors are important.</li> <li>Safety Awareness: A strong understanding of safety protocols.</li> <li>Willingness to Learn: A proactive attitude towards learning new techniques.</li> </ul>	<ul> <li>Tools and Equipment: The job involves using various hand and power tools, including trowels, hammers, and mixers.</li> <li>Collaboration: They work closely with bricklayers and other construction professionals to ensure structures are built correctly and safely.</li> <li>Work Hours: The job usually requires working 40 hours a week, but may include weekends and holidays, especially when deadlines are approaching</li> </ul>	Somerset Community College Southeast Kentucky Community and Technical College West Kentucky Community and Technical College

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Plumber: Work on	Mechanical Aptitude: An	Physical Demands: The	KCTCS Campuses
installing, repairing, and	interest in and	job involves lifting heavy	
maintaining plumbing	understanding of how	materials, bending,	Plumbing Technology
systems in residential,	plumbing systems and	kneeling, and standing for	<u>KCTCS</u>
commercial, and industrial	tools work.	long periods. Assistants	
settings.		often work in confined	
	Physical Stamina:	spaces and may need to	
Plumbing Technician:	Plumbing can be physically	crawl under buildings or	
Specialize in diagnosing	demanding, requiring	into tight areas.	
and fixing plumbing issues,	strength and endurance to		
often working for service	handle heavy tools.	Safety Concerns: Working	
companies or as part of a		with tools like saws and	
maintenance team.	Manual Dexterity: Good	pipe cutters poses risks	
	hand-eye coordination and	such as cuts, falls, and	
Pipefitter: Focus on	fine motor skills are	exposure to hazardous	
installing and maintaining	essential.	materials. Wearing	
high-pressure piping		protective gear is essential.	
systems.	Problem-Solving Skills:		
	The ability to think critically	Work Environment:	
Steamfitter: Similar to	and solve plumbing issues	Plumber assistants	
pipefitters, but specifically	quickly and efficiently.	typically work indoors in	
work with systems that		residential homes,	
carry steam.	Attention to Detail:	commercial buildings, and	
	Precision is important to	construction sites. They	
Plumbing Inspector:	ensure that plumbing	may also work outdoors,	
Ensure that plumbing	systems are installed or	exposed to varying weather	
installations comply with	repaired correctly.	conditions.	
local codes and			
regulations.	Basic Math Skills:	Tools and Equipment: The	
	Understanding	Job involves using various	
Construction Laborer:	measurements,	hand and power tools,	
Assist with various tasks	proportions, and basic	including wrenches, pliers,	
on construction sites.	calculations.	pipe cutters, and soldering	
Maintononaa Warkary	Sofoty Awaranaaa	equipment.	
Parterm general	Salety Awareness: A	Collaboration: Thoy work	
		collaboration. They work	
including plumbing ropairs	salety protocots.	other construction	
in residential or	Communication Skills:	professionals to ensure	
commercial buildings	Effective communication	nlumbing systems are	
commercial buildings.	with team members	installed and maintained	
	supervisors and	correctly	
	customers		
		Work Hours: The job	
		usually requires working 40	
		hours a week, but may	
		include weekends and	
		holidays, especially when	
		deadlines are approaching.	

# EDUCATION AND TRAINING CAREER PATHWAYS

#### 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.

Caroox Chaisan	Antitudes Needed		Destasenden
Caleer Choices	Aptitudes Needed	Environmente	Opportunition in Kontuolov
Clease and Taschery Tasch at	Communication 8	Classroom Environments	
the elementary middle high		Topohoro anond most of their	Education RECTO
che elementary, module, mgn	and written communication	time in classrooms, managing	Education BOTC
areas such as CTE or aposial	and written communication	atudant behavior delivering	Education ECTC
aleas such as CTE of special	with others	Student benavior, delivering	Education COTO
education.	with others.	negitive learning atmosphere	Education HCTC
Educational Consultants	<b>Bationas:</b> Topobing requires	positive tearning atmosphere.	Education HCC
Work with schools and	patience. Teaching requires	<b>Bhysical Domanda:</b> The job	Education ICTC
advectional organizations to	of verving obilities and	involves standing for long	Education MCC
	be eligneticede		Education MOTO
motheda, and student	backgrounus.	periods, moving around the	Education SKCTC
	<b>Creativity:</b> The ability to	lifting materials or equipment	
outcomes.	develop opgoging and	Topoboro moviolog pood to got	University Programs
Instructional Coordinator:	innovative lesson plane that	leachers may also need to set	
Develop instructional		diaplaya	LIK College of Education
material coordinate its	capture students interest.	uispiays.	ON - College of Education
implementation and assess	Organizational Skills: Good	Work Hours: Teachers	Lof College of Education
its effectiveness in schools	organizational skills bein in	typically work during school	and Human Development
		hours but often spend	and Indinan Development
Teacher Mentor: Support and	the classroom and keeping	additional time planning	Kentucky State University
guide new teachers helping	track of student progress		School of Education, Human
them develop their teaching	track of student progress.	and attending meetings. This	Development and Consumer
ekille	Empathy: Understanding and	can extend their workday	Sciences
SKIUS:	being sensitive to the needs	beyond regular bours	Sciences
Educational Administrator:	and feelings of students	beyond regular nours.	WKIL-College of Education
Take on leadership roles such		Safety Concerns: Ensuring a	and Behavioral Sciences
as principal vice-principal	Adaptability: The ability to	safe environment for students	and Denavioral Sciences
school courselor or district	adapt teaching methods to	is crucial Teachers must be	EKIL- College of Education &
administrator overseeing	meet the diverse needs of	vigilant about notential	Applied Human Sciences
school operations and	students	hazards and manage	<u>Applica Haman Oblehees</u>
policies		classroom disruptions	Murray State College of
	Critical Thinking: Strong		Education and Human
Corporate Trainer: Develop	critical thinking skills are	Collaboration: Teachers work	Services
and deliver training programs	necessary for developing	closely with colleagues	00111000
for employees in various	effective teaching strategies.	administrators, and parents to	Morehead State Ernst & Sara
industries	encente teaching enategieer	support student learning and	Lane Volgenau College of
inductrico.	Technological Proficiency:	address any issues that arise	Education
Curriculum Developer:	Familiarity with educational	Professional development and	
Design educational content	technology and digital tools.	collaboration are key aspects	NKU - College of Education
and programs.		of their role.	<u></u>
		Mental and Emotional	
		<b>Demands</b> : The job can be	
		emotionally taxing, as	
		teachers often deal with	
		student behavior issues.	
		academic pressures, and the	
		need to support students'	
		mental health.	
		Technology Use: Increasingly.	
		teachers use technology for	
		lesson planning, delivering	
		instruction, and	
		communicating with students	
		and parents.	

# **ENGINEERING TECHNOLOGY**

#### 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.

Career Choices	Antitudes Needed	Common Work	Postsecondary
Gareer Gholees	Aplitudes Needed	Environments	Opportunities in Kentucky
Energy Manager: Oversee	Analvtical Skills: The	Office Work: Much of their	KCTCS Campuses
energy use in buildings or	ability to analyze data and	time is spent in offices,	• • • • • •
organizations.	identify patterns.	where they analyze energy	Energy Technologies - AAS
C C		usage data, develop	< KCTCS
Energy Analyst: Analyze	Mathematical	energy-saving strategies,	
energy data, identify	Proficiency: A strong	and create reports.	Kentucky Universities
trends, and recommend	foundation in math,		-
improvements.	including algebra and	Site Visits: Regular visits	UK – Stanley and Karen
	statistics.	to facilities are essential to	Pigman College of
Sustainability		inspect energy systems,	Engineering
Consultant: Advise	Technical Aptitude:	ensure compliance with	
businesses and	Comfort with technology	energy efficiency	<u>UK – Power and Energy</u>
organizations on	and an interest in how	standards, and implement	Certificate
sustainable practices.	environmental systems	energy-saving measures.	
-	work.		Materials & Energy Science
Energy Program Manager:		Collaboration: Energy	and Engineering – J.B.
Manage energy-related	Problem-Solving Skills:	managers work closely	Speed School of
projects and programs.	The ability to think critically	with various stakeholders,	Engineering – University of
	and develop innovative	including facility managers,	Louisville
Renewable Energy	solutions to reduce energy	engineers, and	
Specialist: Focus on the	consumption.	sustainability teams.	Earth, Environmental, and
development and			Atmospheric Sciences
implementation of	Attention to Detail:	Safety Concerns: Ensuring	Western Kentucky
renewable energy projects.	Precision is important	the safety of energy	<u>University</u>
	when monitoring energy	systems is crucial.	
Facilities Manager:	use and implementing	Professionals must adhere	
Oversee the operation and	efficiency measures.	to safety protocols and use	
maintenance of building		personal protective	
systems.	Communication Skills:	equipment (PPE) when	
	Effective communication is	inspecting or working on	
Energy Auditor: Conduct	essential for explaining	energy systems.	
audits to assess energy use	energy-saving strategies.		
and efficiency.		Problem-Solving: They	
	Environmental	often encounter challenges	
Environmental Engineer:	Awareness: A strong	that require critical thinking	
Work on projects that	understanding of	and problem-solving skills,	
improve environmental	environmental issues and a	such as optimizing energy	
quality, including energy	commitment to	usage and integrating	
efficiency and pollution control.	sustainability.	renewable energy sources.	
	Project Management	Work Hours: The job can	
	Skills: The ability to plan,	involve long hours,	
	organize, and manage	especially when deadlines	
	projects.	are approaching or when	
		unexpected issues arise.	

#### 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.

		· · · ·	
Career Choices	Aptitudes Needed	Common Work	Postsecondary
Francis Auditary Candulat	Strong Math Ckillar A good	Environments	
Energy Auditor: Conduct	Strong Math Skills: A good	Field work: Many	KCTCS Campuses
energy assessments for	grasp of algebra, geometry,	technicians spend a	Frank Taskaslarian AAO
residential, commercial, or	and basic statistics is	significant amount of time	Energy Technologies - AAS
industrial buildings to	essential.	outdoors, conducting site	< KCTCS
identify energy-saving		assessments, installing	
opportunities.	Science Proficiency:	and maintaining renewable	Kentucky Universities
	Knowledge in physics,	energy systems.	
Sustainability Specialist:	chemistry, and		<u>UK - Environmental &amp;</u>
Help organizations develop	environmental science.	Laboratories: Some	Sustainability Studies
and implement sustainable		technicians work in labs,	
practices, conduct audits,	Technical Aptitude:	analyzing samples and	Materials & Energy Science
and make	Comfort with using tools,	conducting experiments.	and Engineering – J.B.
recommendations.	equipment, and		Speed School of
	technology.	Industrial and	Engineering – University of
Environmental		Commercial Sites:	Louisville
Technician: Collect	Analytical Thinking: The	Technicians often work in	
samples and data for	ability to analyze data,	factories, commercial	Earth, Environmental, and
environmental research,	identify patterns, and solve	buildings, and other	Atmospheric Sciences
focusing on air, water, or	problems.	industrial settings.	Western Kentucky
soil quality.			University
	Attention to Detail:	Offices: Office	<u> </u>
Renewable Energy	Precision is key when	environments are common	
Technician: Install.	working with energy	for those involved in	
maintain and repair	systems and ensuring	planning project	
renewable energy systems	compliance with	management and data	
followable energy systems.	regulations and standards	analysis	
Energy Manager. Oversee		anatysis.	
energy use within an	Communication Skills:	Educational Institutions:	
organization develop	Effective written and verbal	Some technicians work in	
stratogios to improvo	communication skills are		
anorgy officionary	pocossary for reporting	research institutions	
energy eniciency.	findings collaborating with	contributing to academic	
Linhan Diannam Dovelon	teems and advecting	research and teaching	
Orban Planner: Develop	learns, and educating	research and teaching.	
	cuents.		
emphasize sustainability.		Government Agencies:	
	Interest in Sustainability:	working for local, state, or	
	A genuine interest in	federal government	
Consultant: Advise on	environmental issues and	agencies is another	
sustainable building	sustainable practices will	possibility, where	
practices and help design	drive motivation and	technicians help develop	
energy-efficient buildings.	engagement in the field.	and enforce policies	
		related to energy use and	
		sustainability.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Aerospace Engineer:	Strong Mathematics	Government Agencies:	KCTCS Campuses
Design, develop, and test	Skills: Proficiency in	Many aerospace engineers	
aircraft, spacecraft, and	algebra, geometry,	work for agencies like	Aviation Maintenance
related systems.	trigonometry, and calculus.	NASA, the Federal Aviation	Technology   KCTCS
, , , , , , , , , , , , , , , , , , ,		Administration (FAA) and	
Aerosnace Technician:	Physics Knowledge: A	the Department of Defense	University Programs
Actospace recimician:	solid understanding of		oniversity rograms
Assist engineers in the		(D0D)	
development and testing of	physics, particularly	Deine te la desetaria	OK- Aerospace Engineering
new aerospace	mechanics and	Private Industry:	
technologies.	thermodynamics.	Companies such as	
		Boeing, Lockheed Martin,	
Flight Test Engineer: Plan	Analytical Thinking: The	and SpaceX employ	
and conduct tests on new	ability to analyze complex	aerospace engineers to	
aircraft and spacecraft.	problems, think critically,	design, develop, and	
·	and develop logical	manufacture aircraft.	
Aircraft/Spacecraft	solutions		
<b>Designer:</b> Focus on the		Research and	
concentual and detailed	Attention to Details	Development: Some	
		Development. Some	
design of aircraft and	Precision is key in	engineers locus on R&D,	
spacecraft.	aerospace engineering.	working on new	
		technologies and materials	
Mission or Payload	Creativity and Innovation:		
Specialist: Work on the	Designing new aircraft and	Academia: Teaching and	
planning and execution of	spacecraft requires	conducting research at	
space missions, including	creative & innovative	universities and colleges is	
the design and integration	thinking	another common	
of navloads		environment	
of phytodus.	Technical Skills	chivitoninient.	
	Fomiliarity with computer	Monufooturing Escilition	
CAD lechnician: Use	Familiarity with computer-	Manufacturing Facilities:	
computer-aided design	aided design (CAD)	Engineers may work in	
software to create detailed	software and basic	manufacturing settings,	
technical drawings.	programming.	overseeing the production	
		of aerospace components.	
Inspector and	Teamwork and		
Compliance Officer:	Communication:	Laboratories: Testing and	
Ensure that aerospace	Aerospace projects often	analyzing materials,	
products and processes	involve large teams.	components, and systems.	
comply with industry			
standards	Problem-Solving Skills:	Offices: Much of the design	
standards.	Engineers frequently	and planning work is done	
Motorialo Engineero		in office patting work is dolle	
Parenais Engineer:		in onice settings, where	
Develop and test materials	require quick and effective	engineers use computer-	
used in the construction of	solutions.	aided design (CAD)	
aircraft and spacecraft.		software and other tools.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
A		Environments	Opportunities in Kentucky
Automation Engineer:	Strong Mathematics	Manufacturing Plants:	KCICS Campuses
Design, develop, and	Skills: Proficiency in	Many automation	
maintain automated	algebra, geometry,	engineers work in factories	Automation and Industrial
systems to improve	trigonometry, and calculus.	and production facilities.	<u>Iechnology   MCC</u>
efficiency and productivity.			
	Physics Knowledge: A	Research and	Industrial Maintenance
Industrial Automation	solid understanding of	Development Labs:	lechnology   BCIC
Engineer: Focus on	physics, particularly	Engineers in R&D labs	
creating and implementing	mechanics and electricity	focus on developing new	Engineering and
automated systems for		automation technologies	Electronics Technology
manufacturing and	Analytical Thinking: The	and improving existing	JCTC
production lines.	ability to analyze complex	systems.	
	problems, think critically,		Advanced Manufacturing
Robotics Engineer:	and develop logical	Office Settings: Some	SCC
Develop and maintain	solutions.	automation engineers work	
robotic systems used in		in office environments,	University Programs
manufacturing, healthcare,	Technical Skills:	particularly those involved	
and other fields.	Familiarity with computer	in designing and	UK - Stanley and Karen
	programming and software	programming automated	Pigman College of
Control Systems	tools, such as CAD and	systems.	Engineering
Engineer: Design and	PLC can be very beneficial.		
manage control systems		Warehouses and	LARRI - J.B. Speed School
that regulate processes	Attention to Detail:	Distribution Centers:	of Engineering - University
and machinery.	Precision is key in	Automation engineers in	of Louisville
	automation engineering.	these settings design and	
Automation Technician:		maintain automated	Manufacturing Engineering
Assist engineers in	Problem-Solving Skills:	systems for inventory	Technology   Western
installing, maintaining, and	Engineers frequently	management, order	Kentucky University
troubleshooting automated	encounter challenges that	fulfillment, and logistics.	
systems.	require quick and effective	_	Murray State School of
-	solutions.	Call Centers and	Engineering
Quality Assurance (QA)		Processing Centers:	
Automation Tester:	Creativity and Innovation:	Engineers may work on	Department of Engineering
Develop and execute	Designing new automated	automating processes in	& Technology - Eastern
automated tests to ensure	systems and improving	service industries.	Kentucky University
software quality and	existing ones.		
performance.		Remote Work: With	
p	Teamwork and	advancements in	
Electro-mechanical	Communication:	technology, many	
Technician: Work with	Automation projects often	automation engineers have	
both electrical and	involve large teams	the flexibility to work	
mechanical systems often		remotely	
in manufacturing settings			

### 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.

<b>a a</b> : i		<b>•</b> • • • •	
Career Choices	Aptitudes Needed	Common Work	Postsecondary
Civil Engineer: Design	Strong Mathematics	Office Record Work: A	
construct and maintain	Skille: Droficionovin	office-based work. A	Keres campuses
	Skills: Proficiency in	significant portion of a civit	Civil Engineering
Structure projects.	trigonometry, and coloulus	engineer swork is	
Structural Engineer:	ingonometry, and calculus.	conducted in an onice	<u>Technology   KCTCS</u>
	Dhusiaa Kasudadaa A	setting.	
analysis of structures	Physics Knowledge: A	Fieldsseeds and Otto Misitas	University Programs
Iransportation Engineer:	solid understanding of	Fieldwork and Site Visits:	
Plan, design, and manage	physics, particularly	Civil engineers frequently	<u>UK - Civil Engineering</u>
transportation systems.	mechanics and electricity	Visit construction sites to	
Geotechnical Engineer:		inspect the progress of	U of L-Civil &
Analyze soil and rock	Analytical Thinking: The	projects.	Environmental Engineering
properties.	ability to analyze complex		
Water Resources	problems, think critically,	Project Management: Many	Civil Engineering, Bachelor
Engineer: Work on projects	and develop logical	civil engineers take on	of Science Western
related to water supply.	solutions.	project management roles,	Kentucky University
Environmental Engineer:		overseeing the progress of	
Develop solutions to	Technical Skills:	construction projects.	Civil Engineering Degree
environmental problems.	Familiarity with computer		Program at Murray State
Construction Manager:	programming and software	Environmental	<u>University</u>
Oversee construction	tools, such as CAD and	Assessments: Civil	
projects.	PLC can be very beneficial.	engineers may conduct	
Project Manager: Manage		field assessments to	
engineering projects.	Attention to Detail:	evaluate the impact of	
Urban Planner: Develop	Precision is key in	construction on natural	
plans and programs for	automation engineering.	habitats.	
land use in urban areas.			
Coastal Engineer: Design	Problem-Solving Skills:	Collaborative Work: Civil	
and manage projects	Engineers frequently	engineering projects often	
related to coastal areas.	encounter challenges that	require collaboration with a	
Municipal Engineer: Work	require quick and effective	diverse range of	
for local governments to	solutions.	professionals	
design and maintain public			
infrastructure.	Creativity and Innovation:	Client Interaction: Civil	
Construction Engineer:	Designing new automated	engineers regularly interact	
Focus on the planning and	systems and improving	with clients, government	
execution of construction	existing ones.	agencies, and community	
projects.	Ū.	stakeholders.	
Bridge Engineer:	Teamwork and		
Specialize in the design.	Communication:		
construction, and	Automation projects often		
maintenance of bridges.	involve large teams.		
Geomatics Engineer: Use			
surveying and manning			
techniques to collect and			
analyze spatial data			

#### 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

Caroor Chaican	Antitudos Noodod	Common Work	Postacondany
Career Choices	Aptitudes Needed	Environments	Opportunities in Kentucky
Electrical Engineer:	Strong Mathematics	Office-Based Work: Many	KCTCS Campuses
Design, develop, and test	Skills: Proficiency in	engineers spend a	
electrical systems	algebra geometry	significant amount of time	Electrical Technology I
equipment and devices	trigonometry and calculus	in office settings	BCTC
Electronics Engineer:	ingenerietty, and edicated		<u></u>
Focus on designing and	Physics Knowledge: A	Research and	Engineering and
developing electronic	solid understanding of	Development Labs:	Electronics Technology I
devices and systems.	physics, particularly	Engineers in R&D labs	JCTC
Power Systems Engineer:	mechanics and electricity	focus on developing new	
Work on the generation.		technologies and	Engineering and
transmission, and	Analytical Thinking: The	improving existing systems.	Electronics Technology I
distribution of electrical	ability to analyze complex		SCC
power.	problems, think critically.	Manufacturing Plants:	<u> </u>
Control Systems	and develop logical	Engineers often work in	University Programs
Engineer: Design and	solutions.	manufacturing settings.	
manage control systems			UK - Electrical Engineering
that regulate processes.	Technical Skills:	Fieldwork and Site Visits:	
Telecommunications	Familiarity with computer	Some roles require	Electrical & Computer
Engineer: Design and	programming and software	engineers to visit sites to	Engineering (Dept) - J.B.
optimize communication	tools, such as CAD and	observe and address	Speed School of
networks.	PLC can be very beneficial.	problems.	Engineering - University of
Automation Engineer:	· _ · · · · · · · · · · · · · · · · · ·	F	Louisville
Develop and implement	Attention to Detail:	Telecommunications:	
systems that streamline	Precision is key in	Engineers in this field work	Electrical and Electronics
and optimize industrial	automation engineering.	on designing and	Engineering Technology -
processes		optimizing communication	Northern Kentucky
Embedded Systems	Problem-Solving Skills:	networks.	University
Engineer: Design and	Engineers frequently		
develop computer systems	encounter challenges that	Government Agencies:	Electrical Engineering -
integrated into various	require quick and effective	Some engineers work for	WKU
devices.	solutions.	federal, state, or local	
Instrumentation		government agencies	Electrical Engineering
Engineer: Focus on the	Creativity and Innovation:	5	Track
design and maintenance of	Designing new automated		
instruments and devices.	systems and improving		
Robotics Engineer:	existing ones.		
Develop and maintain	C C		
robotic systems.	Teamwork and		
Quality Assurance (QA)	Communication:		
Engineer: Develop and	Automation projects often		
execute tests to ensure	involve large teams.		
quality and performance.	-		

#### 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 multistep 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Design Engineer: Dovelop	Strong Mathematics	Office Based Work: Many	KCTCS Compuses
concentual designs for	Skille: Proficionovin	design angineers spond a	Koros Gampuses
products and systems	algebra geometry	significant amount of time	Engineering Design
products and systems.	trigonomotry and calculus	in office settings	Tachnician Diploma
CAD Drafter: Convert	tingonometry, and cateditas.	in onice settings.	KCTCS
design plans into technical	Physics Knowledge: A	Research and	Koros
drawings and blueprints	solid understanding of	Development (B&D) Labs:	I Iniversity Programs
diawings and bluepinits.	nhysics narticularly	Engineers in B&D labs	Oniversity Programs
Product Designer: Focus	mechanics and electricity	focus on developing new	LIK-Stanley and Karen
on creating new products	meenanies and electricity	technologies and	Pigman College of
or improving existing ones	Analytical Thinking: The	improving existing systems	Engineering
or improving oxiding oned.	ability to analyze complex		
Mechanical Designer:	problems, think critically.	Manufacturing Plants:	J.B. Speed School of
Design mechanical	and develop logical	Engineers often work in	Engineering - University of
systems and components.	solutions.	manufacturing settings.	Louisville
-,		overseeing the production	
Industrial Designer:	Technical Skills:	of components and	The School of Engineering
Develop designs for	Familiarity with computer	systems.	and Applied Sciences I
manufactured products,	programming and software	5	Western Kentucky
combining art, business,	tools, such as CAD and	Fieldwork and Site Visits:	University
and engineering.	PLC can be very beneficial.	Some roles require	
	_	engineers to visit sites to	Engineering Design
Project Engineer: Manage	Attention to Detail:	observe and address	Technology   Murray State
engineering projects,	Precision is key in	problems.	University
coordinating between	automation engineering.		
different teams and		Collaborative	Department of Engineering
stakeholders.	Problem-Solving Skills:	Workspaces: Engineering	<u>&amp; Technology - Eastern</u>
	Engineers frequently	design projects often	Kentucky University
Quality Assurance (QA)	encounter challenges that	involve collaboration with	
Engineer: Develop and	require quick and effective	other engineers, designers,	
execute tests to ensure the	solutions.	and stakeholders.	
quality and performance of			
designs and products.	Creativity and Innovation:	Remote Work: With	
	Designing new automated	advancements in	
Manufacturing Engineer:	systems and improving	technology, many design	
Design and optimize	existing ones.	engineers have the	
manufacturing processes.		flexibility to work remotely.	
	Teamwork and		
Research and	Communication:		
Development (R&D)	Automation projects often		
Engineer: Work on	involve large teams.		
aeveloping new	Indone at in Table 1		
technologies and	Interest in lechnology		
improving existing	interest in technology		
products.	anging and dooing		
1	engineering, and design.		1

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Mechanical Engineer: Design,	Strong Math Skills:	Manufacturing Plants: Many	KCTCS Campuses
develop, and test mechanical	Proficiency in algebra,	mechanical engineers work in	•••••
devices, including tools,	geometry, trigonometry, and	factories or production	Engineering and
engines, and machines.	calculus.	facilities.	Electronics Technology
			VCTCS
HVAC Engineer: Specialize in	Analytical Thinking: The	Research and Development	<u>KCTCS</u>
heating, ventilation, and air	ability to analyze complex	Labs: Engineers in R&D focus	Hairmaite Due des se
conditioning systems.	problems.	on developing new products	University Programs
		and technologies	
Aerospace Engineer: Work on	Creativity: Engineering often		<u>UK - Mechanical</u>
the design and development of	involves designing innovative	Construction Sites:	Engineering   Stanley and
aircraft, spacecraft, satellites,	solutions.	Mechanical engineers involved	Karen Pigman College of
and missiles.	Attention to Datail: Drasision	In construction projects may	<u>Engineering</u>
Automotive Engineers	Attention to Detail: Precision	work on-site.	
on the design development	ensure designs and	Corporate Offices: Some	Mechanical Engineering
and manufacturing of vehicles	calculations are accurate	engineers work in office	(dept) - J.B. Speed School
and their systems		environments managing	of Engineering - University
	Technical Skills: Familiarity	projects.	of Louisville
Biomedical Engineer:	with basic computer	projecto.	<u>or Louisville</u>
Develop medical devices and	programming and software.	Consulting Firms: Engineers	Department of Engineering
equipment, combining		in consulting roles provide	
principles of engineering and	Communication Skills:	expert advice to clients.	& Technology - Eastern
biology.	Engineers need to effectively		Kentucky University
	communicate their ideas and	Energy Sector: Mechanical	
CAD Technician: Use	collaborate with others.	engineers in the energy	<u>Mechanical &amp;</u>
computer-aided design		industry may work in power	Manufacturing Engineering
software to create detailed 2D	Curiosity and Passion for	plants	Technology Major:
or 3D models for	Learning: A genuine interest in		Northern Kentucky
manufacturing.	how things work and a desire	Automotive and Aerospace	University,
	to continuously learn.	Industries: Engineers in these	
Maintenance Engineer:		fields often work in specialized	Mechanical Engineering
Design and implement	Problem-Solving Skills: The	facilities, designing and testing	Western Kentucky
maintenance strategies.	ability to think critically and	venicles, aircraft, and related	University
Energy Engineer: Work on	solve problems eniciently.	components.	onversity
projects related to renewable	Teamwork: Ability to work well	Healthcare and Biomedical	
and sustainable energy	with others	Facilities: Mechanical	
systems	with others.	engineers in this sector work	
oyotomo.		on developing medical devices	
Robotics Engineer: Design		and equipment.	
and develop robotic systems			
and automation solutions.			

# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Additive Manufacturing	Strong Math Skills:	<b>Research and Development</b>	KCTCS Campuses
Engineer: Design and optimize	Proficiency in algebra,	Labs: Engineers and scientists	
3D printing processes.	geometry, and calculus.	work on developing new	3D Printing Technician - Digital
		additive manufacturing	Printing Technology   MCC
Application Engineer: Work	Technical Skills: Familiarity	technologies.	
with clients to implement	with computer-aided design		Advanced Manufacturing
additive manufacturing	(CAD) software and basic	Manufacturing Facilities:	<u>Technology   BCTC</u>
solutions.	programming.	These environments involve	
		the production of parts and	University Programs
Research and Development	Analytical Thinking: The	products using 3D printing.	
Engineer: Focus on	ability to analyze complex		UofL Additive Manufacturing
developing new additive	problems and develop logical	Design Studios: Professionals	Institute of Science and
manufacturing techniques.	solutions.	use computer-aided design	<u>Technology — Additive</u>
		(CAD) software to create	Manufacturing Institute of
Manufacturing Technician:	Creativity: A creative mindset	detailed models and	Science & Technology
Operate and maintain 3D	helps in designing innovative	prototypes.	
printing equipment.	products.		Bachelor of Science in
		Healthcare Facilities:	Manufacturing Engineering -
Quality Assurance Engineer:	Attention to Detail: Precision	Additive manufacturing is used	Eastern Kentucky University
Develop and implement	is important to ensure the	to create custom medical	
quality control processes.	accuracy and quality of 3D	devices, implants, and	Manufacturing Engineering
	printed parts.	prosthetics.	Technology   Kentucky State
Product Designer: Use			University
additive manufacturing to	Problem-Solving Skills: The	Automotive and Aerospace	
create innovative product	ability to think critically and	Industries: Engineers in these	
designs.	solve problems efficiently.	sectors use 3D printing to	
	Dession for Lesurin de A	design and produce	
Software Engineer: Develop	Passion for Learning: A	components.	
and improve software tools	genuine interest in new		
used in additive	technologies and a desire to	Educational Institutions:	
manufacturing.	continuously learn and stay	Universities and technicat	
Color and Markating, Dramate	updated.	schools often have labs and	
additive manufacturing	Communication Skiller	workshops dedicated to	
additive manufacturing	Communication Skills:	additive manufacturing.	
netential aliente		Conculting Firmer	
potential clients.	important for collaborating	Consultants provide expertise	
Consultant: Provide expert	with others	to husinesses looking to	
advice on additive	with others.	implement or optimize	
manufacturing strategies		additive manufacturing	
manalaotaning strategios.		processes	
		F 300000	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
Automotive Engineer:	Strong Foundation in		
Work on the design	Moth and Solonoor	onces. Automotive	Keres campuses
development and testing	Broficionovin subjects like	eignificant amount of time	Automotive Technology I
development, and testing	Proficiency in subjects like	in office pottings, where	
of vehicles.	physics, chemistry, and	the second	<u>KCTCS</u>
	mathematics (especially	they engage in design,	University Day day as
Manufacturing Engineer:	calculus and algebra).	planning, and project	University Programs
Develop and optimize		management tasks.	
manufacturing processes	Problem-Solving Skills:		UK - Mechanical
for vehicle production.	The ability to analyze	Research and	Engineering
	problems, think critically,	Development Centers:	
Test Engineer: Conduct	and develop solutions.	These facilities are	UK - Production
environmental, stress, and		dedicated to innovation	Engineering Certificate
performance testing on	Technical Aptitude:	and testing.	
vehicle components and	Familiarity with tools,		J.B. Speed School of
vehicles.	machinery, and basic	Manufacturing Plants: In	Engineering - University of
	mechanical concepts.	these environments,	Louisville
Design Engineer: Focus on		engineers oversee the	
the conceptualization and	Computer Skills:	production process,	The School of Engineering
design of vehicles	Knowledge of computer-	ensuring that vehicles are	and Applied Sciences
	aided design (CAD)	built to specifications.	Western Kentucky
Quality Engineer: Ensure	software and basic		University
that all products meet	programming.	Workshops &	
company standards.		Laboratories: For testing	Engineering Technology,
	Attention to Detail:	and prototyping,	B.S.   Morehead State
Materials Development	Precision is important in	automotive engineers often	University   Kentucky
Engineer: Develop and	engineering to ensure	work in workshops or labs.	
select new materials to	safety and efficiency.		
meet the design		Fieldwork: Some	
requirements.	Teamwork and	automotive engineers may	
	<b>Communication:</b> Ability to	need to visit suppliers.	
Robotics Engineer:	collaborate effectively and	customers, or different	
Design maintain and	communicate ideas	manufacturing facilities	
program robotics used in	clearly	indiadeaning radiation	
production	otourty.	Collaborative Spaces:	
production.	Passion for Automobiles:	Given the interdisciplinary	
Sales Engineer: Sell highly	A genuine interest in cars	nature of automotive	
technical automotive	and how they work can	engineering collaboration	
products or services	drive motivation	with other engineers	
products of services.	dive motivation.	designers and technicians	
Process Planner:	Time Management and		
Coordinate the inteke of	Organization: Ability to		
orders and achedula the	balance coursework		
	patance coursework,		
production line.	projects, and possibly		
	internsnips.		

#### Computerized Manufacturing and Machining 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	Opportunities in Kentucky
CNC Machinist: Operate and	Mathematical Skills:	Manufacturing Plants: Many	KCTCS Campuses
program computer numerical	Proficiency in mathematics,	CMM engineers work in	
control (CNC) machines.	including whole numbers,	manufacturing facilities where	Computerized
	fractions, decimals, basic	they oversee the production	Manufacturing & Machining -
Machinist: Set up and operate	algebra, geometry, and some	process.	AAS < KCTCS
a variety of machine tools to	trigonometry.		
produce precision parts and		Machine Shops: These	University Programs
instruments.	Attention to Detail: The ability	specialized workshops are	
	to focus on intricate details	equipped with various	UK - Mechanical Engineering
Tool and Die Maker: Design	and maintain accuracy.	machining tools and CNC	Stanley and Karen Pigman
and build specialized tools,		machines. Engineers here	College of Engineering
dies, and fixtures.	Mechanical Aptitude: A	focus on creating precision	
	natural understanding of how	parts and components.	Mechanical Engineering (dept)
Manufacturing Technician:	machines and tools work,		- J.B. Speed School of
Work on the production floor	along with an interest in	Quality Control Laboratories:	Engineering - University of
to ensure machines are	mechanical systems.	In these settings, CMM	Louisville
running efficiently and		engineers use coordinate	
products meet quality	Problem-Solving Skills: The	measuring machines (CMMs)	Department of Engineering &
standards.	ability to troubleshoot and	to inspect and verify the	Technology - Eastern Kentucky
	solve problems that arise	dimensions and tolerances of	<u>University</u>
Quality Control Inspector:	during the manufacturing	manufactured parts.	
Inspect and test products to	process.		Mechanical & Manufacturing
ensure they meet specified		Research and Development	Engineering Technology Major:
standards and tolerances.	Computer Skills: Familiarity	Centers: Engineers in R&D	Northern Kentucky University,
	with computer-aided design	centers work on developing	
CAD/CAM Programmer: Use	(CAD) and computer-aided	new machining techniques.	Mechanical Engineering
computer-aided design (CAD)	manufacturing (CAM)		Western Kentucky University
and computer-aided	software.	Educational Institutions:	
manufacturing (CAM) software		Some CMM engineers work in	
to create and optimize	Manual Dexterity: Good	academic settings, teaching	
machining processes.	hand-eye coordination and the	the next generation of	
	ability to handle tools and	machinists and engineers.	
Maintenance Technician:	materials with precision.		
Maintain and repair machinery		Fieldwork: Occasionally,	
and equipment used in	Work Ethic and Discipline: A	CMM engineers may need to	
manufacturing.	strong work ethic, punctuality,	visit client sites, suppliers, or	
	and the ability to follow safety	other manufacturing facilities.	
Production Supervisor:	protocols are essential.		
Oversee the manufacturing			
process.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondarv
		Environments	Opportunities in Kentucky
Architectural Engineer:	Strong Math Skills:	Construction Sites: Many	KCTCS Campuses
Design and develop building	Proficiency in geometry,	spend a significant amount of	-
systems, including structural,	algebra, calculus, and	time on construction sites,	Architectural Technology
HVAC, electrical, and	trigonometry.	overseeing projects.	BCTC
plumbing systems.			
	Science Knowledge: A good	Architectural and	University Programs
Construction Project	grasp of physics is important	Engineering Firms: Working in	
Manager: Oversee	for understanding concepts	an office setting, these	Construction Management:
construction projects from	like force, compression, and	professionals collaborate with	Northern Kentucky University
start to finish.	tension.	architects, engineers, and	
		other stakeholders.	Bachelor of Science in
Building Services Engineer:	Attention to Detail: Precision		Construction Management -
Focus on the design,	is vital in both design and	Government Agencies: Some	Eastern Kentucky University
installation, and maintenance	construction to ensure safety	work for local, state, or federal	
of essential services and	and functionality.	government agencies.	Construction Management
equipment.			Western Kentucky University
	Problem-Solving: The ability	Consulting Firms: Providing	
Architectural Designer: Work	to think critically and solve	expert advice on construction	
with architects to create	complex problems.	projects.	
visually appealing and	Organizity An antituda far		
functional structures.	Creativity: An aptitude for	Educational Institutions:	
<b>D</b> uilding <b>F</b> ugineony Oversee	designing inneventive and		
Building Engineer: Oversee	designing innovative and	technical achaele	
and advise on the	aesthetically pleasing	technical schools.	
maintenance of civil	structuresz.	Manufacturing Companies:	
engineering projects	Communication Skills:	Working with companies that	
engineering projects.	Effective communication is	produce construction	
Sustainability Consultant:	important for collaborating	materials and equipment	
Advise on sustainable building	with architects engineers	indicitate and equipment.	
practices	contractors and clients	Real Estate Development	
produces		Companies: Involved in the	
Structural Engineer: Analyze	Technical Skills: Familiarity	planning and development of	
and design the structural	with computer-aided design	residential, commercial, and	
elements of buildings and	(CAD) software and other	industrial properties.	
other structures.	tools.		
Urban Planner: Develop plans	Time Management: Managing		
and programs for land use in	time efficiently to meet project		
urban areas.	deadlines.		

### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Design Engineer: Develop and	Strong Math Skills:	Office Settings: Many design	KCTCS Campuses
improve products, systems,	Proficiency in algebra,	engineers work in office	
and machinery.	geometry, calculus, and	environments.	Engineering Design Technician
Preduct Designers Feeling on	trigonometry.	Manufacturing Planta, Sama	- Diploma < KCTCS
the aesthetics functionality	Science Knowledge: A solid	design engineers work in	University Programs
and user experience of	foundation in physics and	manufacturing facilities	Oniversity Programs
products.	chemistry helps in	where they oversee the	UK Stanley and Karen Pigman
1	understanding material	production process	College of Engineering
Mechanical Engineer: Design	properties.		
and analyze mechanical		Research and Development	J.B. Speed School of
systems and components.	Problem-Solving: The ability	Labs: In R&D labs, design	Engineering - University of
	to think critically and solve	engineers focus on developing	Louisville
CAD Technician: Use CAD	complex problems.	new products and	
software to create detailed	One stiniture Are sentiturels for	technologies.	The School of Engineering and
technical drawings and plans.	creative thinking is important	Conculting Firmer Design	Applied Sciences   Western
Manufacturing Engineer	for designing new products	engineers in consulting firms	<u>Kentucky Oniversity</u>
Develop and improve	and improving existing ones.	provide expert advice to	Mechanical & Manufacturing
manufacturing processes to		clients on various projects	Engineering Technology Major:
increase efficiency.	Attention to Detail: Precision		Northern Kentucky University,
	is crucial in design engineering	Field Work: Some design	
Industrial Designer: Combine	to ensure accuracy.	engineers spend time in the	Department of Engineering &
art, business, and engineering		field, especially when working	Technology - Eastern Kentucky
to create products.	Technical Skills: Familiarity	on large-scale projects.	University
Sustana Fraincen Design	with computer-aided design		
and integrate complex	(CAD) software and other	Design engineers may also	
systems ensuring that all	engineering toots.	work in academia teaching	
components work together.	Communication Skills:	and conducting research at	
	Effective communication is	universities or technical	
<b>Research and Development</b>	important for collaboration.	schools.	
Engineer: Focus on creating			
new technologies and	Time Management: Managing		
improving existing products.	time efficiently to meet project		
	deadlines and balance		
	multiple task.		
	l		

### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Electrical Engineer: Design,	Mathematical Skills: A strong	Construction Sites:	KCTCS Campuses
develop, and test electrical	foundation in algebra,	Overseeing the installation	
systems and equipment.	geometry, and trigonometry is	and maintenance of electrical	Electrical Technology < KCTCS
	essential.	systems.	
Project Engineer: Oversee the			University Programs
installation, commissioning,	Problem-Solving Abilities:	Offices: Designing electrical	
and maintenance of electrical	The ability to troubleshoot and	systems, preparing project	UK-Electrical Engineering
systems.	solve complex problems	plans, and collaborating with	Stanley and Karen Pigman
		other engineers.	College of Engineering
Control Systems Engineer:	Technical Aptitude:		
Design and manage	Familiarity with basic	Manufacturing Plants:	Electrical & Computer
automated systems for	electrical concepts, tools, and	Ensuring that electrical	Engineering (Dept) - J.B. Speed
manufacturing.	safety practices.	systems and machinery are	<u>School of Engineering -</u>
		operating efficiently.	University of Louisville
Power Systems Engineer:	Attention to Detail: Precision		
Focus on the generation,	is important when working	Research and Development	Electrical Engineering   WKU
transmission, and distribution	with electrical systems.	Labs: Innovating new	Ogden College of Science and
of electrical power.		electrical technologies and	Engineering   Western
	Analytical Thinking: The	improving existing systems.	Kentucky University
Electrical Design Engineer:	ability to analyze and interpret		
Create detailed electrical	technical drawings and	Power Plants: Managing the	Electrical and Electronics
plans for buildings.	schematics.	generation, transmission, and	Engineering Technology Major:
		distribution of electrical	Northern Kentucky University
Instrumentation Engineer:	Communication Skills:	power.	
Develop and maintain	Effective communication skills		Department of Engineering &
instruments used for	for collaborating with team	Telecommunications	lechnology - Eastern Kentucky
measuring and controlling	members.	Facilities: working on the	University
processes.	Manual Danta ita Orași	Installation and maintenance	For single single to the state D.O. I
Frank Ornelland Addies	Manual Dexterity: Good	of communication systems.	Engineering lechnology, B.S.
Energy Consultant: Advise on	nand-eye coordination and the	Field Others	Morenead State University
energy efficiency and	ability to work with small	Field Sites:	Kentucky
sustamable energy.	components and tools.	troublesheating issues,	Murroy State Fleetrical
Rebeties Engineen Design	Interest in Technology A	croubleshooling issues, and	Engineering
and dovelon repetie overare	keen interest in rechnology: A	ensuring compliance with	Engineering
and outomation solutions	technologies and staving up to	salety standards	
and automation solutions.	dete with industry trends		
	date with industry trends.		

# Fabrication Engineering CIP 14.1901.0

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.

Career Chaicas	Antitudes Needed	Common Work	Postsacondony
Career Choices	Aptitudes Needed	Environmente	Opportunities in Kentucky
Exprination Engineer: Design	Mathematical Skills: A solid	Manufacturing Plants:	
and improve manufacturing	understanding of algebra	Overseeing the production of	Keres campuses
nrocesses	geometry and trigonometry	fabricated components and	Fabrication - Certificate <
processes.	geometry, and the onometry.	ensuring that machinery	KCTCS
Metal Fabricator: Create	Mechanical Antitude:	operates efficiently	KOTOS
metal structures and	Familiarity with tools	operates enterently.	University Programs
components	machinery and basic	Construction Sites: Working	oniversity regrams
components.	mechanical concents	on the installation and	LIK-Mechanical Engineering
Welder: Join metal parts using		assembly of fabricated	Stanley and Karen Pigman
various welding techniques	Problem-Solving Abilities:	structures and systems	College of Engineering
often working in construction	The ability to troubleshoot and	structures and systems.	<u>Conce of Engineering</u>
and manufacturing	solve complex problems	Besearch and Development	Mechanical Engineering (dept)
and manufacturing.	serve comprex problems.	labs: Innovating new	- LB Speed School of
CNC Operator: Operate	Attention to Detail: Precision	fabrication techniques and	Engineering - University of
numerical computer control	is important when working	improving existing processes1	Louisville
machines	with materials and machinery.		Louisvillo
		Fabrication Shops: Creating	Mechanical Engineering
Quality Control Inspector:	Technical Skills:	custom parts and components	Western Kentucky University
Ensure that products meet	Understanding technical	using various tools and	<u></u>
quality and safety standards.	drawings, blueprints, and CAD	machinery.	Department of Engineering &
	software.		Technology - Eastern Kentucky
Production Supervisor:		Ouality Control	University
Oversee manufacturing	Manual Dexterity: Good	Departments: Ensuring that	
operations.	hand-eye coordination and the	fabricated products meet	Engineering Technology, B.S.
•	ability to work with small	quality and safety standards	Morehead State University I
Industrial Designer: Develop	components and tools.	through inspections and	Kentucky
and design products.		testing.	
	Communication Skills:	-	Mechanical Engineering
Field Installer: Install	Effective communication is	Field Sites: Conducting on-	Degree   Murray State
fabricated components and	important for collaborating	site installations, repairs, and	University
systems on-site.	with team members and	maintenance of fabricated	
	understanding project	systems.	
Laser Cutter Operator: Use	requirements.		
laser cutting machines to		Design Offices: Developing	
create precise parts and	Analytical Thinking: The	detailed plans and blueprints	
components.	ability to analyze and interpret	for fabrication projects	
	data and technical information		
Maintenance Technician:	is necessary.		
Maintain and repair fabrication			
equipment to ensure smooth			
production processes.			

#### Industrial Maintenance Engineering CIP 14.4101.00

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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	Opportunities in Kentucky
Maintenance Technician:	Mathematical Skills: A solid	Manufacturing Plants:	KCTCS Campuses
Perform routine maintenance	understanding of algebra,	Ensuring that production	
and repairs on machinery and	geometry, and basic	machinery operates efficiently	Industrial Maintenance
equipment.	trigonometry.	and performs routine	<u>Technology &lt; KCTCS</u>
		maintenance.	
Industrial Electrician: Install,	Mechanical Aptitude:		University Programs
maintain, and repair electrical	Familiarity with tools,	Power Generation Facilities:	
systems in industrial settings.	machinery, and mechanical	Maintaining and repairing	UK-Mechanical Engineering
	concepts.	equipment used in the	Stanley and Karen Pigman
Maintenance Supervisor:		generation and distribution of	College of Engineering
Oversee maintenance teams	Problem-Solving: The ability	electrical power.	
and ensure that all equipment	to troubleshoot and solve		Mechanical Engineering (dept)
is functioning properly.	complex problems is crucial.	Construction Sites: Working	- J.B. Speed School of
		with heavy machinery and	Engineering - University of
Reliability Engineer: Focus on	Attention to Detail: Precision	equipment, often in outdoor	Louisville
Improving the reliability and	Is important when working	settings with varying weather	Machanical Engineering I
enciency of equipment and	with machinery to ensure	conditions.	Mechanical Engineering
systems.	salety and functionality.	Maintonanaa Shanay	western Kentucky Oniversity
Eacilities Manager: Manage	Technical Skills:	Conducting repairs and	Department of Engineering &
the maintenance and	Understanding technical		Technology - Fastern Kentucky
operation of buildings and	manuals blueprints and	wide range of equipment and	University
facilities	schematics	machinery	onvoisity
	sonomatios.	indoninory.	Engineering Technology, B.S. I
Mechanical Technician: Work	Manual Dexterity: Good	Research and Development	Morehead State University I
on the maintenance and repair	hand-eve coordination and the	Labs: Innovating new	Kentucky
of mechanical systems and	ability to work with small	maintenance techniques and	
machinery.	components and tools.	improving existing processes.	Mechanical Engineering
			Degree   Murray State
Instrumentation Technician:	Communication Skills:	Facilities Management:	University
Maintain and repair	Effective communication is	Overseeing the maintenance	-
instruments used for	important for collaborating	of building systems, including	
measuring and controlling	with team members.	HVAC, plumbing, and	
processes.		electrical systems.	
	Analytical Thinking: The		
Automation Technician: Work	ability to analyze and interpret		
with automated systems and	data and technical information		
robotics.	is necessary.		

#### 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-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.

Career Choices Aptitudes Needed	Common Work	Postsecondary
	Environments	Opportunities in Kentucky
Structural Engineer: Design Mathematical Skills: A solid	Construction Sites:	KCTCS Campuses
and analyze buildings, bridges, understanding of algebra,	Overseeing the construction of	
and other structures. geometry, and basic	buildings, bridges, and other	Architectural Technology
trigonometry.	structures.	KCTCS
Civil Engineer: Work on		
infrastructure projects such as Mechanical Aptitude:	Engineering Firms: Working in	University Programs
roads, dams, and water supply Familiarity with tools,	an office setting to design and	
systems. machinery, and mechanical	analyze structural plans,	<u>UK - Civil Engineering</u>
concepts.	collaborate with architects,	
Construction Manager:	and prepare detailed drawings.	U of L-Civil & Environmental
Oversee construction <b>Problem-Solving:</b> The ability		Engineering -J.B. Speed School
projects, ensuring they are to troubleshoot and solve	Government Agencies:	of Engineering
completed on time, within complex problems is crucial.	Ensuring public infrastructure	Obil Engine stind Decksler of
budget, and according to	projects meet regulatory	Civil Engineering, Bachelor of
design specifications. Attention to Detail: Precision	standards and safety	<u>Science (534P, 534) &lt; Western</u>
Project Engineer: Manage with machinery to ansure	requirements.	<u>Kentucky Oniversity</u>
engineering projects from safety and functionality	Pesearch and Development	Civil Engineering Degree
concention to completion	Labs: Innovating new	Program at Murray State
	materials and methods for	University
Structural Designer: Create	structural engineering and	onversity
detailed drawings and plans manuals blueprints and	conducting tests to improve	Mechanical Engineering
for structures, working closely schematics.	existing designs.	Degree   Murray State
with architects and engineers.	onering deelghet	University
Manual Dexterity: Good	Consulting Firms: Providing	
Building Inspector: Ensure hand-eye coordination and the	expert advice on structural	
that construction projects ability to work with small	integrity and design for various	
comply with building codes components and tools.	projects.	
and safety regulations.		
Communication Skills:	Educational Institutions:	
<b>Consulting Engineer:</b> Provide Effective communication is	Teaching and conducting	
expert advice on structural important for collaborating	research in structural	
integrity and design for various with team members.	engineering principles and	
projects.	practices.	
Analytical Thinking: The		
<b>Research Engineer:</b> Conduct ability to analyze and interpret		
research to develop new data and technical information		
materials and methods for Is necessary.		
suuciulai engineening.		

# Welding Engineer 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Welding Engineer: Design,	Mathematical Skills: A strong	Manufacturing Plants:	KCTCS Campuses
develop, and optimize welding	foundation in algebra,	Overseeing welding	
processes and equipment.	geometry, and trigonometry is	processes.	Welding Technology < KCTCS
	essential for performing		
Welding Inspector: Examine	precise calculations.	Construction Sites: Working	University Programs
welds to ensure they meet		on the welding of structural	
industry standards and	Mechanical Aptitude:	components for buildings,	UK-Mechanical Engineering
specifications.	Familiarity with tools,	bridges, and other	Stanley and Karen Pigman
	machinery, and basic	infrastructure.	College of Engineering
Welding Technician: Assist in	mechanical concepts.		
the setup, operation, and		Fabrication Shops: Creating	Mechanical Engineering (dept)
maintenance of welding	Problem-Solving Abilities:	custom parts and components	- J.B. Speed School of
equipment.	The ability to troubleshoot and	using various welding	Engineering - University of
	solve complex problems is	techniques.	Louisville
Manufacturing Engineer:	crucial in developing and		
Oversee the production	optimizing welding	Research and Development	Mechanical Engineering
process, including welding	techniques.	Labs: Innovating new welding	Western Kentucky University
operations, to ensure		techniques and materials and	
efficiency and quality.	Attention to Detail: Precision	conducting experiments.	Department of Engineering &
	is important when working		lechnology - Eastern Kentucky
Robotic Welding Technician:	with welding processes to	Quality Control	University
Program and maintain robotic	ensure quality and safety.	Departments: Ensuring that	
welding systems used in		welded products meet quality	Engineering lechnology, B.S.
automated manufacturing	lechnical Skills:	and safety standards.	Morenead State University
processes.	drowings, blueprints, and	Field Sites, Droviding on site	Kentucky
Quality Assurance Engineers	welding ooden	Fleta Sites: Providing projects	Machanical Engineering
Quality Assurance Eligineer.	weiding codes.	traublesheating issues and	Degree   Murroy State
duality control procedures for	Manual Dexterity: Good	ensuring compliance with	
welding operations	hand eve coordination and the	sofety standards	Oniversity
wetuing operations.	ability to work with small	salety standards.	
<b>Research and Development</b>	components and tools.	Educational Institutions:	
Engineer: Innovate new	·	Teaching welding techniques,	
welding techniques and	Communication Skills:	safety practices, and	
materials.	Effective communication is	conducting research in	
	important for collaborating	welding engineering.	
Field Service Engineer:	with team members and		
Provide on-site support for	understanding project		
welding equipment and	requirements.		
processes.			
	Interest in Technology: A		
	keen interest in emerging		
	welding technologies.		

#### 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 complete product.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Wood Manufacturing	Mathematical Skills: A solid	Manufacturing Plants: These	*Note: There are no programs
Engineer: Design and optimize	understanding of	facilities are where raw wood	in Kentucky that focus
manufacturing processes for	mathematics, including	is processed into finished	exclusively on Wood
wood products.	geometry and algebra.	products. Engineers here	manufacturing engineering,
		focus on optimizing	though general manufacturing
CAD Designer: Use computer-	Technical Skills: Familiarity	production processes &	engineering does have
aided design (CAD) software to	with hand tools and power	ensuring quality control.	components of this aspect of
create detailed plans and	tools, as well as basic		engineering.
specifications for wood	woodworking techniques.	Furniture Factories: In these	
products.		settings, engineers design and	KCTCS Campuses
	Problem-Solving: The ability	oversee the production of	
Production Manager: Oversee	to troubleshoot and solve	furniture	Manufacturing Engineering
the production process in	problems that arise during the		Technology < KCTCS
wood manufacturing facilities.	manufacturing process.	Sawmills: Engineers in	
		sawmills are involved in the	University Programs
Quality Control Inspector:	Attention to Detail: Precision	initial processing of raw	
Ensure that wood products	is key in woodworking to	timber.	Bachelor of Science in
meet industry standards and	ensure high-quality products.		Manufacturing Engineering -
specifications.		Research and Development	Eastern Kentucky University
	Safety Awareness:	Labs: Some engineers work in	
Machinery Maintenance	Understanding and adhering	R&D labs, developing new	UK-Stanley and Karen Pigman
Technician: Install, maintain,	to safety protocols.	wood products, treatments,	College of Engineering
and repair industrial		and manufacturing	
machinery used in wood	Communication Skills:	technologies	Manufacturing Engineer
manufacturing.	Effective communication is		Murray State
<b>.</b>	necessary for collaborating	Forestry Operations:	
Cabinetmaker/Bench	with peers & instructors.	Engineers may also work in	
Carpenter: Create custom		forestry, managing the	
wood products such as	Creativity and Design Skills:	sustainable harvesting of	
furniture and cabinets.	An aptitude for design and	timber.	
	creativity can help in		
Product Development	developing innovative and	Consulting Firms: Engineers	
Engineer: Innovate new wood	functional wood products.	in consulting roles provide	
products and improve existing		expertise to various clients,	
designs, working closely with	Time Management: The ability	helping them optimize their	
other engineers and designers.	to manage time effectively to	wood manufacturing	
	complete projects within	processes, improve product	
	deadunes.	quality, and implement	
		sustainable practices.	

# FAMILY AND CONSUMER SCIENCES

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
	Communication Skills:	Educational Institutions:	KCTCS Campuses
Nutritional Aide: Prepares	Effective verbal and written	Working as teachers or	
and distributes healthy meals	communication skills.	administrators in schools,	Human Services < KCTCS
in hospitals, nursing homes, or		colleges, and universities.	
other care centers.	Empathy and Compassion: A		University Programs
	genuine interest in helping	Community Centers:	
Family and Consumer	others and understanding their	Providing support and	Kentucky State University
Sciences Teacher: Educates	needs.	educational programs to	Division of Family and
students on topics like		enhance the well-being of	Consumer Sciences
nutrition, personal finance,	Problem Solving: The ability	community members.	
and family management in	to identify issues and develop		UK-Human Development and
middle or high schools.	practical solutions.	Healthcare Facilities:	Family Sciences
		Working in hospitals, clinics,	
Community Service	Organizational Skills:	and nursing homes as	Child and Family Services,
Manager: Oversees social	Managing time, resources, and	nutritional aides, health	Bachelor of Science (5011) <
service programs and	tasks efficiently helps in	educators, or family support	Western Kentucky University
community organizations,	handling multiple	specialists.	
working to improve public	responsibilities.		Bachelor of Science in Family
well-being.		Government Agencies:	and Consumer Sciences
	Financial Literacy: Basic	Developing and implementing	Education - Eastern Kentucky
Human Development	knowledge of budgeting and	policies and programs that	<u>University</u>
Specialist: Works with	managing resources.	support families and	
individuals and families to		communities.	Bachelor of Science in Family
promote healthy development	Basic Technical Skills:		and Consumer Sciences
and relationships.	Familiarity with common	Nonprofit Organizations:	Education – Murray State
	software and tools used in the	Offering services and support	<u>University</u>
Consumer Advocate: Helps	field	to specific populations.	
consumers understand their			Bachelor of Science in Family
rights and navigate issues	Critical Thinking: Analyzing	Private Practice: Providing	and Consumer Sciences
related to products and	situations and making	counseling, financial planning,	Education – Western Kentucky
services.	informed decisions	or consulting services.	<u>University</u>
	Interpersonal Skills: Ability to	Corporate Settings: Working	
	build and maintain positive	in human resources, employee	
	relationships.	wellness programs.	
	Adaptability: Being flexible	Hospitality and Event	
	and able to adjust to changing	Planning: Managing events,	
	situations.	coordinating services, and	
		ensuring customer	
	Cultural Awareness:	satisfaction.	
	Understanding and respecting		
	diverse backgrounds and		
	perspectives.		

# Culinary and Food Services CIP 12.0500.00

The Culinary and Food Services 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	Opportunities in Kentucky
Executive/Corporate Chef:	Creativity: The culinary arts	Restaurants: This is one of the	KCTCS Campuses
Oversees multiple kitchens	involve innovation and	most common settings,	
within an operation.	creativity. A love for cooking is	ranging from casual to fine	Culinary Arts   KCTCS
	also necessary.	dining establishments.	
Chef de Cuisine/Head Chef:			University Programs
Responsible for overseeing all	Attention to Detail: Precision	Hotels, Resorts & Cruise	
kitchen operations in a	is crucial in cooking, from	Ships: Culinary professionals	Culinary Arts Program
restaurant or other dining	measuring ingredients to	in these settings often work in	Sullivan University
facility.	plating dishes. Attention to	multiple dining venues.	
-	detail ensures consistency		UK-Hospitality Management &
Pastry Chef: Specializes in	and quality.	Catering Companies: Provide	Tourism
creating desserts, pastries,		food services for events such	
and baked goods and	Time Management: The ability	as weddings, corporate	Hospitality Management &
overseeing bakeshop	to manage time effectively is	functions, and parties.	Dietetics, B.S Hotel,
operations.	essential in a fast-paced		Restaurant, & Tourism
	kitchen.	Institutional Kitchens:	Management Concentration
Sous Chef: Acts as the		Schools, hospitals, retirement	Western Kentucky University
second-in-command in the	Physical & mental stamina:	communities, prisons, and	
kitchen, assisting the chef with	Working in a kitchen can be	corporate cafeterias employ	
daily operations.	physically demanding.	culinary staff to prepare large	
	requiring long hours on your	quantities of meals.	
Line Cook: member of the	feet. It also requires the ability	-1	
kitchen brigade who works on	to remain focused on multiple	Bakeries and Pastry Shops:	
a kitchen station to prepare	tasks and concentrate.	Specializing in baked goods	
food orders.		and desserts.	
	Teamwork: Kitchens are highly		
Caterer: Provides food	collaborative environments.	Food Trucks and Pop-Up	
services for events such as		Restaurants: These mobile	
weddings, parties, and	Adaptability: The ability to	and temporary dining options	
corporate functions	adapt to changing situations	offer unique opportunities for	
	and handle unexpected	culinary creativity and direct	
Restaurant Manager:	challenges is crucial	customer interaction	
Manages the overall			
operations of a restaurant	Basic Math Skills:	Private Households: Personal	
	Understanding basic math	chefs work in private homes	
Food and Beverage Director:	including basic algebra is	preparing customized meals	
Oversees the food and	necessary	for individuals or families	
beverage operations in hotels			
or large establishments.	Safety and Sanitation	Research and Development	
	Awareness: Knowledge of	Work in B&D developing new	
Culinary Instructor: Teaches	kitchen safety and sanitation	products recipes and cooking	
culinary arts in high schools	practices is vital	techniques	
culinary schools, community		toorniquoo.	
colleges & private cooking			
classes			
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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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Preschool Teacher: Work with	Patience: Working with young	Preschools and	KCTCS Campuses
children aged 3-5 to develop	children requires a lot of	Kindergartens: These are the	
their social, motor, and	patience, as they are still	most traditional settings	Interdisciplinary Early
cognitive skills.	developing their social and	where ECE professionals	Childhood Education - AAS <
	emotional skills.	teach.	KCTCS
Childcare Provider: Provide			
care and educational activities	Communication Skills:	Daycare Centers: These	University Programs
for children in settings like	Effective verbal and non-	facilities provide care and	
daycare centers, in-home	verbal communication is	educational activities for	UK-Interdisciplinary Early
daycares, or after-school	crucial for interacting with	infants, toddlers, and	Childhood Education
programs.	children, parents, and	preschoolers.	
	colleagues.		Early Childhood and
Teacher's Aide: Assist lead		In-Home Daycare: Some ECE	Elementary Education —
teachers in the classroom,	Creativity: The ability to	professionals choose to run	College of Education and
Implementing lesson plans,	create engaging and	daycare services from their	Human Development
grading, and one-on-one	educational activities that	own homes.	
student support.	capture children's interest.		Interdisciplinary Early
		Head Start Programs: These	Childhood Education,
Childcare Center Director:	Empathy: Understanding and	federally funded programs	<u>Bachelor of Science (526) &lt;</u>
Oversee the daily operations	responding to the needs and	offer comprehensive early	Western Kentucky University
of a childcare center, including	emotions of young children.	childhood education, health,	
staff supervision, curriculum		nutrition, and parent	Bachelor of Science in Child &
development, and	Organizational Skills:	involvement.	Family Studies - Eastern
relationships with parents.	Managing a classroom,		Kentucky University
	planning lessons, and keeping	Elementary Schools: ECE	
Curriculum Designer:	track of each child's progress	professionals may work in the	Murray State-Early Childhood
Develop educational materials	requires good organization.	early grades (kindergarten	and Elementary Education
and programs tailored to		through third grade), focusing	
young children.	Adaptability: Being flexible	on foundational skills.	Early Childhood Education,
	and able to adjust plans based		B.A.   Morehead State
Instructional Specialist:	on the needs and behaviors of	Community Centers/NPO's:	University   Kentucky
Support teachers by providing	children.	These centers often offer early	
training and resources to		childhood programs and	
improve classroom practices.	Observation Skills: Noticing	services.	
	subtle changes in children's		
Family Support Specialist:	behavior or development can	Hospitals and Clinics: Some	
Work with families to provide	help address issues early on.	ECE professionals work in	
resources and support for		pediatric units or clinics,	
children's development.		providing educational and	
		developmental support to	
		young children.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	Opportunities in
			Kentucky
FASHION DESIGN CAREERS	Creativity: The ability to	Work Environment:	KCTCS Campuses
Fashion Designer: Create original	think outside the box and	Fashion designers may	-
clothing, accessories, and footwear	come up with unique	work in design studios,	Apparel Graphics and
designs.	designs.	offices, or from home.	Production - Certificate <
		Interior designers work	<u>KCTCS</u>
Fashion Show Manager: Coordinate	Attention to Detail:	in offices, client sites,	
all elements of fashion shows, from	Precision creation of	and sometimes remotely.	Residential Designer -
planning to execution.	designs in fashion and	They often visit	Certificate < KCTCS
	interior design	construction sites and	
Buyer: Select and purchase clothing		showrooms.	Online Certified
and accessories for retail stores.	Drawing and Sketching:		Residential Interior
	Proficiency in illustrating	Hours: Fashion	Designer from Ashland
Fashion Merchandiser: Analyze	design ideas by hand or	designers nours can be	Community & lechnical
market trends to develop strategies for	using digital tools.	tong and irregular,	College
product placement and sales.	Understanding of Textiles	show seasons Interior	University Programs
Textile Designer: Design fabrics and	(ED): Knowledge of	Designers typically enjoy	Oniversity Programs
natterns for use in clothing and home	different fabrics their	flexible work hours but	University of Kentucky:
decor.	properties, and how they	may occasionally need to	Interiors:
	can be used in design.	work evenings and	Planning/Strategy/Design
Stylist: Work with individuals or		weekends depending on	· · · · · · · · · · · · · · · · · · ·
brands to create cohesive and stylish	Trend Awareness (FD):	workload and meeting	Merchandising, Apparel &
looks.	Keeping up with current	deadlines.	Textiles   Academics
	fashion trends and		
Costume Designer: Design costumes	predicting future styles.	Collaboration: Both	WKU
for theater, film, and television		frequently collaborate	Interior Design & Fashion
productions.	Sewing and Construction	with other professionals	Merchandising, B.S
	Skills: Basic skills in	and clients.	Fashion Merchandising
INTERIOR DESIGN CAREERS	sewing (FD) and ability to		Concentration   Western
Interior Designer: Plan and design	work with building tool (ID)	Technology: Both use	Kentucky University
interior spaces for homes, offices, and		various design software	
other buildings2.	Spatial Awareness (ID):	specific to each field.	EKU
Residential Designer: Specialize in	plan the layout of spaces	Challenges: Managing	Apparel Design &
designing private homes and living	effectively.	tight deadlines, staving	Merchandising (ADM) <
spaces.		updated with trends, and	Eastern Kentucky
	Communication &	meeting client	University
Commercial Designer: Focus on	Problem-Solving Skills:	expectations are	
designing commercial spaces like	Ability to communicate	common challenges in	<u>Design (DES) &lt; Eastern</u>
offices, hotels, and restaurants.	ideas and solve problems	both fields of endevor.	Kentucky University
Exhibit Designers Create displays and			
fixtures for exhibitions, museums, and			
trade shows			
Set Designer: Design interior sets for			
film, television, and theater			
productions.			
Lighting Designer: Plan and design			
lighting systems for various spaces.			
			1

# 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.

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Career Choices	Aptitudes Needed		Postsecondary
		Environments	
Registered Dietitian (RD):	Strong Science Foundation:	Hospitals and Healthcare	KCICS Campuses
work in nospitals, clinics, or	A good grasp of blology,	Facilities: Distitians and	
private practice to provide	chemistry, and physics is	nutritionists in these settings	Online Nutrition for Optimal
nutritional counseling & create	essential.	provide medical nutrition	Health, Wellness, and Sports
diets.		therapy.	from Big Sandy Community &
	Mathematical Skills:		Technical College
Food Scientist:	Proficiency in math,	Private Practice: Some	
Conduct research and develop	particularly in statistics for	dietitians and nutritionists	University Programs
new food products, improve	analyzing data and conducting	operate independently,	
food safety.	research.	offering personalized dietary	UK-B.S. in Dietetics   Dietetics
		and nutrition advice to clients.	and Human Nutrition
Nutritionist:	Critical Thinking:		
Educate individuals and	The ability to analyze	Community and Public	Department of Agriculture and
communities about healthy	information, solve problems,	Health Programs: These	Food Science   Western
eating habits.	and make informed decisions.	professionals work on	Kentucky University
		educating the public about	
Food Safety Specialist:	Attention to Detail:	healthy eating habits &	Bachelor of Science in Food &
Ensure that food products	Precision is key when	developing nutrition programs.	Nutrition - Eastern Kentucky
meet safety standards and	conducting experiments or		University
regulations.	ensuring food safety.	Food Industry: Food	
0		scientists and dietitians in the	Kentucky State University
Clinical Dietitian:	Communication Skills:	food industry work with	Option in Nutritional Sciences
Work in healthcare settings to	Strong written and verbal	companies to develop and	& Food Systems
manage the dietary needs of	communication skills are	evaluate food products.	
patients.	necessarv.		Bachelor of Science in Family
	,	Research and Academia:	and Consumer Sciences
Food Service Manager:	Nutrition:	Many dietitians and food	Education - Eastern Kentucky
Oversee the operations of food	A genuine interest in food.	scientists conduct research.	University
service establishments.	health, and nutrition.	teach at universities, and	<u></u>
		contribute to scientific	Bachelor of Science in Family
Research Scientist:	Organizational Skills:	knowledge in the field of	and Consumer Sciences
Conduct studies on the	Being organized helps in	nutrition	Education – Murray State
nutritional content of foods	managing coursework lab	nutrition.	Liniversity
nutritional content of foods.	work and research projects	Schools and Educational	Oniversity
Health Coach:	work, and research projects.	Institutions: Nutritionists in	Bachelor of Science in Family
Provide personalized guidance	Teamwork:	schools design healthy meal	and Consumer Sciences
and support to individuals	Collaboration with poors 8	programs and promote good	Education Western Kentucky
		programs and promote good	Education - western Kentucky
Quality Control Analysts	professionals is required.		Oniversity
Quality Control Analyst:	Technical Skiller	campus sports teams.	
monitor and test 1000	Teorifical Skills:	Cornerate Wallness	
products to ensure they meet	raminarity with taboratory	Dregramer Distilians and	
quality and salety standards.	equipment and computer	Fiograms: Dietitians and	
	soltware used for data	numuonists promote nealthy	
	analysis.	eating habits	1

# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Classroom Teacher: Teach at	Communication &	Traditional Classrooms: This	KCTCS Campuses
the elementary, middle, high	Collaboration: Strong verbal	includes elementary, middle,	Education - AAS < KCTCS
school, or specific content	and written communication	and high schools where	
areas such as CTE or special	skills and the ability to work	teachers interact face-to-face	University Programs
education.	with others.	with students.	
			UK - College of Education
Educational Consultant:	Patience: Teaching requires	Higher Education: Colleges	
Work with schools and	patience to work with students	and universities employ	U of L — College of Education
educational organizations to	of varying abilities and	educators to teach	and Human Development
Improve curriculum, teaching	backgrounds.	undergraduate and graduate	Kentuela Ctete Liniversity
methods, and student		courses & conduct research.	Kentucky State University -
outcomes.	creativity: The ability to	Online Learning Distances	School of Education, Human
Instructional Coordinator:	innovative lesson plane that	With the rise of digital	Development and Consumer
Develop instructional	approversive lesson plans that	education many educators	<u>Sciences</u>
material coordinate its	capture students interest.	work in virtual environments	WKLL College of Education
implementation and assess	Organizational Skills: Good	work in virtuat environments.	and Behavioral Sciences
its effectiveness in schools	organizational skills help in	Private Industry: Corporate	and benavioral sciences
	nlanning lessons managing	Trainers develop and deliver	FKLL - College of Education &
Teacher Mentor: Support and	the classroom and keeping	training programs for	Applied Human Sciences
guide new teachers, helping	track of student progress.	employees in various	<u>Apprica Haman Obionooo</u>
them develop their teaching	theory of otheronic progressor	industries.	Murray State College of
skills.	Empathy: Understanding and		Education and Human
	being sensitive to the needs	Educational Consulting:	Services
Educational Administrator:	and feelings of students.	Consultants work with	
Take on leadership roles such		schools, districts, and	Morehead State Ernst & Sara
as principal, vice-principal,	Adaptability: The ability to	educational organizations.	Lane Volgenau College of
school counselor, or district	adapt teaching methods to		Education
administrator, overseeing	meet the diverse needs of	Non-Profit Organizations:	
school operations and	students.	Some educators work for non-	NKU - College of Education
policies.		profits, developing	
	Critical Thinking: Strong	educational programs.	
Corporate Trainer: Develop	critical thinking skills are		
and deliver training programs	necessary for developing	State & Federal Government:	
for employees in various	effective teaching strategies.	Educators in this field work on	
industries.		developing policies, provide	
	Technological Proficiency:	consulting, and advising	
Curriculum Developer:	Familiarity with educational	legislatures.	
Design educational content	technology and digital tools.		
and programs.		Libraries and Museums:	
		Inese institutions often	
		employ educators to develop	
		and deliver educational	
		programs, workshops, and	
		tours.	

# 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.

Career Choices	Aptitudes Needed	Common Work Environments	Postsecondary Opportunities in Kentucky
Hotel Manager: Oversees the	Communication Skills:	Customer-Focused: These	KCTCS Campuses
operations of a hotel, ensuring	Effective verbal and written	industries are heavily centered	·
guest satisfaction and efficient	communication.	around providing excellent	Hospitality Management -
management of staff and		customer service.	Certificate < KCTCS
resources.	Customer Service		
	Orientation: A strong focus on	Fast-Paced and Energetic: The	University Programs
Event Planner: Organizes and	providing excellent service and	work can be fast-paced,	
coordinates events such as	ensuring customer satisfaction	especially during peak seasons	EKU-Global Hospitality &
weddings, conferences, and		or events. This requires quick	Tourism
corporate meetings.	Interpersonal Skills: The	thinking and adaptability1.	
	ability to build and maintain		NKU: Online Hotel
Travel Agent: Assists clients in	positive relationships with a	Team-Oriented: Collaboration	Management
planning and booking travel	diverse range of people.	Is key, as you'll frequently work	
arrangements, including tights,	Organizational Skiller Boing	with a team to deliver services	<u>UK-Hospitality Management &amp;</u>
accommodations, and tours.	oliganizational Skills: Deilig	and manage operations.	Tourisin
Food and Beverage Manager	and resources efficiently	Flexible Hours: Jobs in these	WKIL-Hotel Bestaurant &
Manages the operations of	and resources enterently.	fields often require working	Tourism Management
restaurants, bars, and other	Problem-Solving Abilities: The	non-traditional hours, including	Concentration
food service establishments.	capacity to handle unexpected	evenings, weekends, and	
	situations and find solutions.	holidays.	
Cruise Director: Plans and		-	
oversees activities and	Attention to Detail: Ensuring	Diverse and Inclusive: Many	
entertainment on cruise ships.	accuracy in reservations, event	workplaces emphasize	
	planning, and customer	diversity and cultural	
Spa Manager: Manages the	interactions.	sensitivity, creating an inclusive	
operations of a spa, including		environment that respects and	
staff, services, and customer	Adaptability: The industry can	values different backgrounds.	
satisfaction.	be fast-paced and ever-		
Heenitelity Analysts Analyzas	changing, so being flexible and	Positive and Supportive: A	
data to improve business	beneficial	positive work environment that	
operations and customer	Denenciat.	satisfaction and productivity is	
experiences.	Cultural Awareness:	common.	
	Understanding and respecting		
Tour Guide: Leads groups on	different cultures enhances the	Technology-Driven:	
tours, providing information	ability to serve a diverse	Increasingly, these industries	
and insights about the	clientele.	are leveraging technology for	
destinations.		bookings, customer service,	
	Teamwork: Many roles require	and operations management.	
Recreation Manager:	working closely with others, so		
Oversees recreational facilities	being a good team player is	Opportunities for Growth:	
and programs, such as sports	important.	There are often opportunities	
complexes, parks, and	Technical Drafician and	for professional development	
community centers.	Formiliarity with industry	and career advancement.	
	ramually with moustry-		
	specific software and tools.		

# HEALTH SCIENCE CAREER PATHWAYS

#### 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. (NOTE: After completing an Allied Health CTE program, graduates can pursue various postsecondary studies. Options include associate degrees in fields like nursing or radiologic technology, certificate programs for quick entry into roles such as medical assisting or EMT, and bachelor's degrees in health sciences, healthcare administration, nursing, or pre-med.)

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Sonographer: Performs	Strong Communication	Hospitals: Fast-paced and	KCTCS Campuses
ultrasound scans to help	Skills: Essential for interacting	dynamic, hospitals provide	
diagnose patients.	with patients, families, and	exposure to a wide range of	The Kentucky Community and
	healthcare professionals.	medical conditions and	Technical College System
Phlebotomist: Draws blood		treatments.	(KCTCS) offers career paths in
for diagnostic or donation.	Attention to Detail: Important		a variety of health care fields
	for accurately performing	Clinics: More structured and	where a student has a general
Medical Assistant: Assists	tasks and following protocols.	focused on outpatient care,	background in allied health
with clinical and		clinics offer a more	may continue their
administrative tasks in	Empathy and Compassion:	predictable routine.	postsecondary studies. The
healthcare settings.	Vital for providing patient-		Program Finder   KCTCS can
	centered care.	Rehabilitation Centers:	help you locate specific
Health Information		Specialize in helping patients	programs in the health care
Technician: Manages patient	Problem-Solving Skills:	recover from injuries or	field.
health information and	Necessary for addressing	surgeries, focusing on long-	
medical records.	challenges and making	term care.	University Programs
	informed decisions.		Several Universities in
Dietitian: Provides nutritional		Private Practices: Provide	Kentucky offer career paths in
counseling and develops diet	Technical Proficiency:	personalized care in a more	a variety of health care fields
plans.	Helpful for using medical	intimate setting, often with a	where a student who has a
<b>N N N N N N N N N N</b>	equipment and technology.	specific patient population.	general background in allied
Medical lechnologist:	To a second a Compariant form	Dia da antia la barrata di an	nealth may continue their
Conducts laboratory tests to	leamwork: Crucial for	Diagnostic Laboratories:	postsecondary studies. 100
diagnose diseases.	collaborating effectively with	Focus on analyzing medical	numerous to ust here,
V vou Tookaisiana Onevetee V	nealthcare learns.	samples to assist in diagnosis	students should investigate
x-ray recrimician: Operates X-	Time Managements Important		which cligh to their encoifie
diagnostic images	for belonging multiple	Brimery Care Officers Office	interests
ulagnostic intages.	rosponsibilitios and tasks	rimary Cale Onices. One	interests.
Surgical Technician: Assists	responsibilities and tasks.	and proventive care	
in surgical operations by		and preventive care.	
preparing operating rooms and		Urgent Care Centers: Provide	
equipment		immediate care for non-life-	
equipment.		threatening conditions	
		<b>Correctional Facilities:</b>	
		Deliver healthcare services to	
		incarcerated individuals.	

# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	• • • • • • • • • • • • • • • • • • • •	Environments	Opportunities in Kentucky
Biomedical Researcher:	Strong Analytical Skills:	Research Laboratories:	KCTCS Campuses
Conducts research to develop	Important for interpreting data	Conducting experiments and	
new medical treatments and	and conducting research.	studies to advance medical	The Kentucky Community and
technologies.		knowledge and develop new	Technical College System
	Attention to Detail: Crucial	treatments.	(KCTCS) offers a variety of
Clinical Laboratory	for accuracy in experiments		programs related to
Technologist: Performs tests	and data analysis.	Hospitals and Clinics:	Biomedical Sciences across
and analyzes samples to help	-	Working alongside healthcare	its colleges. The <u>Program</u>
diagnose diseases.	Scientific Curiosity: A natural	teams to support patient care	Finder   KCTCS can help you
	interest in understanding	and perform diagnostic tests.	locate specific programs in
Pharmaceutical Sales	biological processes and		Biomedical Sciences.
Representative: Promotes	medical advancements.	Pharmaceutical Companies:	
and sells medications to		Developing and testing new	University Programs
healthcare professionals.	Problem-Solving Abilities:	drugs and medical devices.	
	Necessary for developing	5	Office of Biomedical
Forensic Scientist: Analyzes	hypotheses and	Biotechnology Firms:	Education   Undergraduate
evidence for criminal	troubleshooting experiments.	Innovating and creating	University of Kentucky College
investigations.		products using biological	of Medicine
_	Technical Proficiency:	systems and organisms.	
Healthcare Administrator:	Helpful for using laboratory		Integrated Programs in
Manages operations in	equipment and software.	Academic Institutions:	Biomedical Sciences —
healthcare facilities.		Teaching and conducting	School of Medicine University
	Communication Skills:	research in universities and	<u>of Louisville</u>
Public Health Specialist:	Essential for writing reports	colleges.	
Works on improving	and presenting findings.		Biomedical Sciences, B.S.
community health through		Government Agencies:	Morehead State University
education and policy.	Teamwork: Important for	Working on public health	<u>Kentucky</u>
	collaborating on research	initiatives, regulatory affairs,	
Medical Writer: Creates	projects and lab work.	and policy development.	Bachelor of Science –
scientific documents and			Biomedical Sciences - Eastern
publications.	Time Management: Vital for	Forensic Laboratories:	Kentucky University
	balancing coursework, lab	Analyzing biological samples	
Biotechnologist: Develops	work, and research activities.	for criminal investigations2.	
products and technologies			
using biological systems.			
Environmental Health			
Officer: Ensures public health			
by monitoring environmental			
factors.			
Regulatory Affairs Specialist:			
Ensures compliance with			
healthcare regulations.			

# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Clinical Medical Assistant:	Strong Communication	Hospitals: Fast-paced and	KCTCS Campuses
Assists physicians with patient	Skills: Essential for interacting	dynamic, hospitals provide	
care, performs routine exams,	with patients, families, and	exposure to a wide range of	Medical Assisting   KCTCS
and records vital signs.	healthcare professionals.	medical conditions and	
		treatments.	University Programs
Medical Administrative	Attention to Detail: Important		
Assistant: Focuses on	for accurately recording	Outpatient Clinics: More	Online Certified Clinical
administrative duties such as	patient information and	structured and focused on	Medical Assistant (CCMA)
scheduling appointments,	following medical protocols.	non-emergency care, offering	(Voucher Included) from
managing records, and		a predictable routine.	Eastern Kentucky University
handling billing.	Empathy and Compassion:		
	Vital for providing patient-	Specialty Practices: Such as	
Phlebotomist: Specializes in	centered care and support.	cardiology or dermatology	
drawing blood for tests,		offices, where assistants can	
transfusions, or donations.	Organizational Skills:	develop expertise in specific	
	Necessary for managing	fields.	
EKG Technician: Conducts	multiple tasks and maintaining		
electrocardiograms to monitor	patient records.	Primary Care Offices: Provide	
heart activity.		general healthcare services	
	Technical Proficiency:	and preventive care.	
Medical Office Manager:	Helpful for using medical		
Oversees the daily operations	equipment and technology.	Urgent Care Centers: Offer	
of a medical office or clinic.		immediate care for non-life-	
	Problem-Solving Abilities:	threatening conditions.	
Health Information	Useful for addressing patient		
Technician: Manages patient	needs and handling	Community Health Centers:	
health records and ensures	unexpected situations.	Serve diverse populations and	
their accuracy and security.		focus on preventive care and	
	Teamwork: Crucial for	health education.	
Clinical Research	collaborating effectively with		
Coordinator: Assists in	healthcare teams.	In-Home Care: Provide basic	
managing clinical trials and		patient care in the comfort of	
research studies.	Time Management: Important	the patient's home for patients	
	for balancing clinical duties	who have chronic conditions	
	and administrative tasks.	and are unable to leave their	
		home.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Dental Assistant: Assists	Manual Dexterity: Important	Dental Offices: The most	KCTCS Campuses
dentists during procedures,	for handling dental	typical setting, where	
takes X-rays, and manages	instruments and performing	assistants support dentists	Dental Assisting   KCTCS
patient records.	precise tasks.	during procedures, manage	
		patient records, and perform	University Programs
Orthodontic Assistant:	Strong Communication	routine tasks.	
Specializes in assisting	Skills: Essential for interacting		UK-Dental Assisting   The
orthodontists with braces and	with patients and dental	Specialty Practices: Such as	College of Dentistry
other orthodontic treatments.	professionals.	orthodontic or pediatric dental	
		offices, where assistants can	
Oral Surgery Assistant:	Attention to Detail: Crucial	develop expertise in specific	
Supports oral surgeons during	for accurately recording	areas of dental care.	
surgical procedures.	patient information and		
	following dental procedures.	Hospitals: Assisting with oral	
Dental Office Manager:		surgeries and other dental	
Oversees the administrative	Empathy and Compassion:	procedures in a fast-paced	
operations of a dental	Vital for providing patient-	environment.	
practice.	centered care and making		
	patients feel comfortable.	Community Health Clinics:	
Dental Sales		Providing dental care to	
Representative: Promotes	Organizational Skills:	underserved populations and	
and sells dental products and	Necessary for managing	focusing on preventive care.	
equipment to dental practices.	multiple tasks and maintaining		
	a clean, efficient workspace.	Dental Schools: Supporting	
Dental Laboratory		dental students and faculty in	
Technician: Creates dental	Technical Proficiency:	clinical settings.	
prosthetics like crowns,	Helpful for using dental		
bridges, and dentures	equipment and technology.	Public Health Departments:	
		Working on community dental	
	Teamwork: Important for	health initiatives and	
	collaborating effectively with	education programs.	
	the dental team.		
	<b></b>		
	Time Management: Vital for		
	balancing clinical duties and		
	administrative tasks.		

#### 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, & professional standards

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	Opportunities in Kentucky
EKG Technician: Performs	Attention to Detail: Crucial	Hospitals: Fast-paced and	KCTCS Campuses
electrocardiograms to monitor	for accurately performing and	dynamic, hospitals provide	
and record the heart's	interpreting EKG tests.	exposure to a wide range of	Electrocardiograph Technician
electrical activity.		cardiac conditions and	- Certificate < KCTCS
	Technical Proficiency:	treatments.	
Cardiovascular Technician:	Important for operating EKG		
Assists with more advanced	machines and related	Outpatient Clinics: More	
cardiovascular procedures,	equipment.	structured and focused on	
including stress tests and		non-emergency care, offering	
Holter monitoring.	Strong Communication	a predictable routine.	
	Skills: Essential for explaining		
Telemetry Technician:	procedures to patients and	Cardiology Offices:	
Monitors patients' heart	collaborating with healthcare	Specialize in heart-related	
rhythms remotely, often in a	teams.	care, allowing technicians to	
hospital setting.		develop expertise in	
	Empathy and Compassion:	cardiovascular health.	
Cardiac Monitor Technician:	Vital for providing patient-		
Specializes in observing and	centered care and making	Diagnostic Laboratories:	
interpreting heart rhythms to	patients feel comfortable	Focus on conducting and	
detect abnormalities.	during tests.	analyzing EKG tests and other	
		diagnostic procedures.	
Medical Equipment Sales	Problem-Solving Abilities:		
Representative: Sells and	Necessary for troubleshooting	Long-Term Care Facilities:	
provides training on EKG and	equipment issues and	Provide ongoing monitoring	
other medical equipment.	interpreting test results.	and care for patients with	
		chronic heart conditions.	
Clinical Research	Organizational Skills: Helpful		
Coordinator: Manages clinical	for managing patient records	Renabilitation Centers:	
trials and research studies	and maintaining equipment.	Assist in monitoring heart	
related to cardiovascular		health during physical	
health.	leamwork: Important for	rehabilitation programs.	
	working effectively with other		
	neauncare professionals.		
	Time Management: Vital for		
	balancing multiple tasks and		
	ensuring timely patient care.		

# 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)

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Emergency Medical	Strong Communication	Ambulance Services: EMTs	KCTCS Campuses
Technician (EMT): Provides	Skills: Essential for effectively	often operate ambulances,	·
immediate care and transport	interacting with patients,	responding to 911 calls and	Emergency Medical Technician
for patients in emergency	families, and emergency	providing emergency care on	<u>LKCTCS</u>
situations.	response teams.	the scene and during	
		transport.	University Programs
Paramedic: Offers advanced	Physical Stamina: Important		
medical care and life-support	for handling the physical	Hospitals: Some EMTs work in	Bachelor of Science in
in emergency settings.	demands of emergency care,	emergency departments,	Emergency Medical Care -
	including lifting and moving	assisting with patient care and	Eastern Kentucky University
Firefighter: Combines	patients.	supporting medical staff.	
firefighting duties with			Undergraduate Certificate in
emergency medical services.	Calm Under Pressure: Vital	Fire Departments: Many EMTs	Emergency Management
	for making quick, accurate	are also firefighters, providing	Disaster Sciences   Western
Emergency Room Technician:	decisions in high-stress	emergency medical services	Kentucky University
Assists in hospital emergency	situations.	as part of their duties.	
departments, supporting			EMS Education and Training
doctors and nurses.	Problem-Solving Abilities:	Private Event Services: EMTs	<u>Offerings   Louisville Ky   UofL</u>
	Necessary for assessing	may provide medical coverage	<u>Health</u>
Ambulance Dispatcher:	patient conditions and	at concerts, sports events, and	
Coordinates emergency	determining appropriate care.	other large gatherings.	
response teams and manages			
communication.	Empathy and Compassion:	Industrial Sites: EMTs can	
	Crucial for providing patient-	work in factories or	
Clinical Research	centered care and offering	construction sites, ready to	
Coordinator: Manages clinical	emotional support.	respond to workplace injuries.	
trials and research studies			
related to emergency	Attention to Detail: Important	Remote and Rural Areas:	
medicine.	for accurately recording	EMTs in these settings often	
	patient information and	work with volunteer fire	
Medical Equipment Sales	following medical protocols.	departments or local	
Representative: Sells and		emergency services.	
provides training on	Teamwork: Essential for		
emergency medical	collaborating effectively with		
equipment.	other emergency responders.		
	Time Management: Vital for		
	balancing multiple tasks and		
	ensuring timely patient care.		

# 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Medical Administrative	Strong Communication	Doctor's Offices and Medical	KCTCS Campuses
Assistant: Manages patient	Skills: Essential for interacting	Clinics: These are the most	
records, schedules	with patients, healthcare	common settings, where	Medical Administrative
appointments, and handles	professionals, and insurance	assistants manage patient	Assistant - Diploma < KCTCS
billing in clinics, doctors'	companies.	records, schedule	
offices, and outpatient		appointments, and handle	University Programs
centers.	Organizational Skills:	billing.	onversity rogiuns
	Important for managing		Bachelor of Science in Health
Medical Office Coordinator:	patient records, scheduling	Hospitals: Assistants in	Care Administration - Fastern
Oversees daily operations,	appointments, and handling	hospitals may work in various	Kentucky University
including patient scheduling,	billing tasks.	departments, coordinating	Rondoky Onivoloky
billing, and communication		patient admissions,	Bachelor of Science in Health
with insurance companies.	Attention to Detail: Crucial	discharges, and	Care Administration   Western
	for accurately recording	interdepartmental	Kentucky University
Hospital Unit Assistant:	patient information and	communication.	<u></u>
Coordinates patient	processing insurance claims.		
admissions, discharges, and		Outpatient Care Centers:	
interdepartmental	Technical Proficiency:	These facilities focus on non-	
communication in hospital	Helpful for using medical	emergency care, such as	
settings.	software and office	minor procedures and routine	
	equipment.	check-ups.	
Insurance Claims Assistant:			
Processes claims, verifies	Customer Service Skills:	Specialty Practices: Such as	
coverage, and resolves	Vital for providing positive	cardiology or dermatology	
reimbursement issues.	experience for patients and	offices, where assistants can	
	addressing their needs.	develop expertise in specific	
Patient Navigator: Guides		medical fields.	
patients through the	Problem-Solving Abilities:		
healthcare system, assisting	Necessary for resolving	Community Health Centers:	
with scheduling, treatment	scheduling conflicts and	Serve diverse populations and	
plans, and resource	insurance issues.	focus on preventive care and	
coordination.	-	health education.	
	fime Management: Important		
lelenealth Medical	for balancing multiple tasks	Insurance Companies:	
Assistant: Supports virtual	and ensuring efficient office	Assistants may work on	
consultations by coordinating	operations.	processing claims and	
appointments and managing	Empathy and Compassion	vernying coverage.	
uigitat neatth records.	Emparity and Compassion:	Tolohoolth Sonvisoos	
	oserution providing patient-	Supporting virtual	
	centereu care and support.	supporting virtual	
		oppointments and managing	
		appointments and managing	
		digital health records.	
#### Patient Care Technician CIP 51.1614.00

This pathway prepares individuals for admission to a professional program in nursing. This pathway focuses on caring for patients in an acute care setting.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	Opportunities in Kentucky
Patient Care Technician	Empathy and Compassion:	Hospitals: Fast-paced and	KCTCS Campuses
(PCT): Provides direct patient	Vital for providing patient-	dynamic, hospitals provide	
care, assists with daily	centered care and offering	exposure to a wide range of	Online Patient Care Technician
activities, and monitors vital	emotional support.	medical conditions and	(Voucher Included) from
signs.		treatments.	Gateway Community and
	Strong Communication		Technical College
Nursing Assistant: Supports	Skills: Essential for interacting	Nursing Homes and Long-	
nurses by helping with patient	with patients, families, and	Term Care Facilities: Focus	
care tasks such as bathing,	healthcare professionals.	on providing ongoing care and	
dressing, and feeding.		support to elderly and	
	Attention to Detail: Important	chronically ill patients.	
Phlebotomist: Specializes in	for accurately recording		
drawing blood for tests,	patient information and	Outpatient Clinics: Offer	
transfusions, or donations.	following medical protocols.	more structured and routine	
		care for patients who do not	
Dialysis Technician: Assists	Physical Stamina: Necessary	require overnight stays.	
with dialysis treatments for	for handling the physical		
patients with kidney failure.	demands of patient care,	Rehabilitation Centers:	
	including lifting and moving	Assist patients recovering from	
Telemetry Technician:	patients.	surgeries or injuries, focusing	
Monitors patients' heart		on physical therapy and	
rhythms using EKG	Problem-Solving Abilities:	rehabilitation.	
equipment.	Useful for addressing patient		
	needs and handling	Home Healthcare: Provide	
Emergency Room	unexpected situations.	home care for patients,	
Technician: Works in		helping with daily activities	
emergency departments,	Technical Proficiency:	and medical needs.	
providing immediate care and	Helpful for using medical		
support.	equipment and technology.	Dialysis Centers: Specialize	
Lines a line little Addres Duras data a	To any star Operation for a	In assisting patients	
nome Health Aide: Provides	reamwork: Crucial for	the state of the s	
holping with doily activition	collaborating effectively with	for kidney lature.	
netping with daily activities	neatthcare teams.		
and medical needs.	Time Management: Important		
	for balancing multiple tasks		
	and anouring timely nations		
	Cale.		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	<b>Opportunities in Kentucky</b>
Pharmacy Technician:	Attention to Detail: Crucial	Retail Pharmacies: Such as	KCTCS Campuses
Assists pharmacists in	for accurately dispensing	those found in drugstores or	
dispensing medications and	medications and managing	grocery stores, where	Pharmacy Technology   KCTCS
providing customer service in	prescriptions.	technicians assist with	
retail or hospital pharmacies.	Strong Communication	dispensing medications and	
	Skills: Essential for interacting	providing customer service.	
Lead Pharmacy Technician:	with pharmacists, healthcare		
Oversees other pharmacy	providers, and customers.	Hospitals: Involves preparing	
technicians and manages		and distributing medications,	
workflow in a pharmacy	Organizational Skills:	often requiring more advanced	
setting.	Important for managing	skills like compounding sterile	
	inventory, maintaining records,	medications.	
Pharmacy Supervisor:	and ensuring efficient		
Manages the daily operations	pharmacy operations.	Long-Term Care Facilities:	
of a pharmacy, including staff		Provide medications and	
supervision and inventory	Technical Proficiency:	support for residents in	
management.	Helpful for using pharmacy	nursing homes and assisted	
	software and equipment.	living facilities.	
Pharmacy Informatics			
Specialist: Focuses on the	Customer Service Skills:	Mail-Order Pharmacies:	
use of technology and data to	Vital for providing a positive	Focus on processing and	
improve pharmacy operations	experience for patients and	shipping prescriptions to	
and patient care.	addressing their needs.	patients, often involving large-	
		scale operations.	
Medication Therapy	Problem-Solving Abilities:		
Management Specialist:	Necessary for resolving	Pharmaceutical Companies:	
Works with patients to	prescription issues and	Work in research and	
optimize their medication	handling insurance queries.	development, quality control,	
regimens and improve health		or sales.	
outcomes.	Mathematical Skills:		
	Important for calculating	Government Agencies: Such	
Pharmaceutical Sales	dosages and preparing	as the Department of Veterans	
Representative: Promotes	medications.	Affairs, providing medications	
and sells medications and		to veterans.	
medical products to	Teamwork: Crucial for		
healthcare providers.	collaborating effectively with	Educational Institutions:	
	pharmacy staff and healthcare	Supporting pharmacy	
Compounding Pharmacy	teams.	education programs and	
Technician: Specializes in		training future pharmacy	
preparing customized		technicians.	
medications for patients.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	<b>Opportunities in Kentucky</b>
Hospital Phlebotomist:	Organizational Skills:	Hospitals:	KCTCS Campuses
Work in hospitals drawing	Keeping track of samples,	Fast Paced and High-Pressure:	
blood from patients for tests,	patient information, and	Hospitals are busy	Phlebotomist - Certificate <
transfusions, research, or	maintaining a clean	environments.	KCTCS
donations.	workspace are important		
	aspects of the job.	Clinical Laboratories:	Phlebotomy for the Health
Medical Laboratory		Structured and Detail-	Care Worker - Certificate <
Technician:	Manual Dexterity:	Oriented: In labs, the focus is	<u>KCTCS</u>
Collect and process blood	Steady hands and good hand-	on precision and accuracy.	
samples in medical labs, often	eye coordination are essential		
working closely with other	for performing venipunctures	Blood Donation Centers:	
healthcare professionals.	accurately.	Community-Focused and	
		Supportive: These centers	
<b>Blood Donation Technician:</b>	Communication Skills:	have a more relaxed	
Work at blood donation	Clear communication helps in	atmosphere compared to	
centers or mobile blood	explaining procedures to	hospitals.	
drives.	patients.		
		Doctor's Offices and Clinics:	
Private Practice:	Empathy and Patience:	Personalized and Patient-	
Work in larger private clinics or	Being empathetic and patient	Centric: Smaller settings like	
practices.	helps in dealing with nervous	clinics allow you to build	
	or difficult patients, making	closer relationships with	
Research Lab:	the process smoother for	patients.	
Collect and process blood	everyone involved.		
samples for research		Outpatient and Long-Term	
purposes in university or	Basic Science Knowledge:	Care Facilities:	
private research labs.	Understanding basic biology	Patient-Focused and	
	and anatomy can be very	Compassionate: These	
Traveling Phlebotomist:	helpful in grasping the	facilities often cater to specific	
Travel to different locations,	concepts taught in the	patient groups, such as the	
such as nursing homes or	program.	elderly or those with chronic	
patients' homes.		conditions.	
Phiebotomy Supervisor:	Physical Stamina:	Home Health Services:	
With experience, you can	The job often requires standing	Independent and Flexible:	
move into supervisory roles,	for long periods and	Some travel to patients' homes	
overseeing other	sometimes working in fast-	and provide services. This role	
phiepotomists.	pacea environments.	requires excellent time	
Dhicketerry Specialist	Droblem Solving Skills	interpersonal skills	
Phiepotomy Specialist:	Proplem-Solving Skills:	interpersonal skills.	
Specialize in areas like	Being able to think quickly and		
pediatric phiepotomy or donor	nancie unexpected situations,		
phiebotomy.	such as difficult veins of		
	patient reactions, is important.		

# Pre-Nursing CIP 51.2699.01

This pathway prepares individuals for admission to a professional program in nursing. This pathway focuses on caring for residents in a long-term care facility.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Registered Nurse (RN):	Science & Math Skills: A solid	Hospitals:	KCTCS Campuses
After completing a nursing	understanding of biology,	Fast Paced and High-Pressure:	
degree, you can work in	chemistry, and anatomy. Basic	Hospitals are busy	Nursing   KCTCS
hospitals, clinics, schools,	math skills are important for	environments.	
and other healthcare settings.	proper calculations.		University Programs
		Clinical Laboratories:	
Licensed Practical Nurse:	Critical Thinking:	Structured and Detail-	UK-College of Nursing
With additional training, you	The ability to analyze	Oriented: In labs, the focus is	
can become an LPN, working	situations, make decisions,	on precision and accuracy.	School of Nursing: Northern
under the supervision of RNs	and solve problems.		Kentucky University
and doctors to provide basic			
nursing care.	Communication Skills:	Doctor's Offices and Clinics:	School of Nursing and Allied
	Clear communication is vital	Personalized and Patient-	Health   Western Kentucky
Certified Nursing Assistant:	for interacting with patients	Centric: Smaller settings like	University
A CNA certification allows you	and healthcare teams.	clinics allow you to build	
to assist patients with daily		closer relationships with	Nursing   Morehead State
activities and provide basic	Empathy:	patients.	University   Kentucky
care.	A genuine concern for others		
	and the ability to empathize.	Outpatient and Long-Term	<u>Nursing   Bellarmine University</u>
Medical Assistant:		Care Facilities:	
You can work in clinics and	Attention to Detail:	Patient-Focused and	
doctors' offices, performing	Precision is important in	Compassionate: These	
both administrative and	administering medications,	facilities often cater to specific	
clinical tasks.	recording patient information,	patient groups, such as the	
	and following medical	elderly or those with chronic	
Healthcare Administrator:	protocols.	conditions.	
With further education, you			
can move into administrative	Physical Stamina:	Home Health Services:	
roles.	Nursing can be physically	Independent and Flexible:	
Numer Education	demanding, requiring long	Some travel to patients' nomes	
Nurse Educator:	nours on your feet and the	and provide services. This role	
	ability to assist patients with	requires excellent time	
gaining experience, you can	mobility.		
in academic or clinical	Time Management:	interpersonal skills.	
	Efficiently managing time and		
settings.	prioritizing tooko		
Public Health Nurse:	איזטוווצווצ נמאאס.		
Focus on community health	Teamwork & Adaptability:		
working with populations to	The ability to work well with		
improve health outcomes	others & being flexible and		
improvo noutin outoomod.	able to adapt to changing		
	situations		
	onuationo.		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Veterinary Assistant:	Strong Academic Skills: A	Fast-Paced and High-	KCTCS Campuses
Work in veterinary clinics or	solid understanding of biology,	Pressure: In veterinary clinics,	
hospitals, assisting	chemistry, and anatomy. Basic	animal hospitals, and	Veterinary Technology   KCTCS
veterinarians with patient care	math skills are also important	emergency care facilities, the	
administrative tasks.	for various calculations.	work environment is often	University Programs
		fast-paced and can be high-	
Veterinary Technician:	Attention to Detail:	pressure, especially during	Veterinary Technology, B.S.
With additional education and	Precision is essential when	emergencies.	Morehead State University
training, you can advance to a	administering medications,		<u>Kentucky</u>
veterinary technician role,	recording information, and	Physically Demanding:	
performing more complex	performing tests.	Veterinary assisting is	
tasks.		physically demanding,	
	Manual Dexterity:	involving tasks like lifting	
Specialized Veterinary	Good hand-eye coordination	animals, cleaning, and	
Assistant:	and steady hands are	standing for long periods.	
Focus on specific types of	important for a variety of		
animals, such as exotic pets,	detailed tasks.	Emotionally Challenging:	
large animals, or aquatic		Working with sick or injured	
species.	Communication Skills:	animals and dealing with	
	Clear communication is vital	distressed pet owners can be	
Veterinary Receptionist:	for interacting with	emotionally taxing.	
Manage appointments, handle	veterinarians, pet owners, and		
client inquiries, and maintain	colleagues.	Collaborative: Veterinary	
the administrative aspects of a		assistants often work as part	
veterinary practice.	Empathy and Compassion:	of a team, collaborating with	
	A genuine concern for animals	veterinarians, veterinary	
Animal Shelter or Rescue	and the ability to empathize.	technicians, and other staff.	
Worker:			
Work in animal shelters or	Physical Stamina:	Structured and Routine-	
rescue organizations, caring	The job can be physically	Based: Many tasks are routine	
for rescued animals.	demanding, requiring long	and follow strict protocols.	
	hours on your feet and some		
Laboratory Animal Care	physical exertion.	Varied and Dynamic: In	
Technician:		settings like mobile veterinary	
Ensure the ethical treatment	Problem-Solving Skills:	services or wildlife parks, the	
and well-being of animals	The ability to think quickly and	work can be more varied and	
used in scientific research.	handle unexpected situations.	dynamic.	

#### JROTC JROTC CAREER PATHWAYS

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Military Officer (Army, Navy,	Discipline and Self-	BASE or GARRISON LIFE:	<b>ROTC Programs in Kentucky</b>
Air Force, Marines, Coast	Motivation: The ability to		
Guard): As an officer, you'll	follow rules, maintain a	Housing: Officers and enlisted	Army ROTC   University of
lead Soldiers, Sailors, Airmen,	routine, and stay motivated	personnel often live on base,	Kentucky
or Marines, manage resources,		with housing ranging from	
and oversee operations.	Physical Fitness: A good level	single-family homes to	ROTC Air Force-University of
JROTC provides leadership	of physical fitness is important	apartment-style	<u>Kentucky</u>
and discipline, making the	as JROTC involves physical	accommodations.	
transition to an officer role	training and activities.		Army ROTC-U of L
smoother.		Work Facilities: Bases are	
	Leadership Skills: Being able	equipped with training	Air Force ROTC-U of L
Military Non-Commissioned	to lead and work well with	facilities, administrative	
Officer (NCO): NCOs provide	others is a core component of	buildings, and specialized	Army ROTC - Eastern Kentucky
leadership at the operational	JROTC.	units for different branches of	University.
level, ensuring Soldiers are		service.	
trained, equipped, and ready	Teamwork and		Air Force ROTC-Eastern
for tasks. They serve as	Collaboration: Working	Support Services: These	Kentucky University
mentors to junior ranking	effectively as part of a team is	include medical and dental	
enlisted personnel.	essential.	clinics, childcare centers,	Military Science   Western
		schools, and recreation	Kentucky University
Combat Engineer: These	Communication Skills: Clear	facilities.	
specialists are responsible for	and effective communication,		Military Science   Morehead
constructing and maintaining	both verbal and written.	FIELD OPPERATIONS:	State University   Kentucky
military infrastructure like			
bridges, roads, and	Problem-Solving: The ability	Training Exercises: These are	Military Science (ROTC)
fortifications. They also assist	to think critically and solve	conducted in remote or rugged	Murray State
in demolitions and mine	problems is highly valued.	terrain to simulate real-world	
clearance.		scenarios, testing physical and	ROTC: Northern Kentucky
	Respect for Authority:	mental endurance.	University
Military Police: Military police	Understanding and respecting		
officers ensure discipline	the chain of command is	Deployment: Military	
within the armed forces,	fundamental.	personnel may be deployed	
manage base security,		worldwide for peacekeeping	
investigate crimes, and	Time Management: Balancing	missions or combat	
enforce laws on military	JROTC commitments with	operations, often in	
installations.	academic responsibilities	unpredictable conditions.	
	requires good time		
Logistics Officer/Non-	management skills.	Remote Locations: Field	
Commissioned Officer: In		operations can take place in	
logistics, you'll plan and		areas with limited access to	
oversee the transportation of		modern amenities, requiring	
supplies, equipment, and		self-sufficiency and	
personnel. It's a vital role in		adaptability.	
ensuring military operations			
run smoothly.			
<b></b>			
Aviation Technician (Air			
Force or Army): Aviation techs			
maintain and repair aircraft,			
ensuring that military planes		OFFICE-BASED ROLES:	
and helicopters are			
operational.		Administrative Tasks: Some	
		military roles involve working	
Firefighter: Firefighters		in an office environment,	
protect lives and property from		nandling logistics, supply	
fire, as well as responding to		chain management, and other	
emergencies. Leadership skills		administrative duties.	
and physical fitness gained in		Technical D. J. Ti	
JROIC can be beneficial in this		iechnical Roles: These	
career.		include engineering,	
		communications, and	
		intelligence work, often	

Police Officer: Police officers		requiring specialized skills and	
maintain law and order,		training.	
protect citizens, and			
investigate crimes. JROTC		DEPLOYMENT TO HOSTILE	
teaches discipline, leadership,		ENVIROMENTS:	
and teamwork that are useful			
in law enforcement.		Combat Zones: Personnel	
		may be deployed to combat	
Emergency Medical		zones, facing high stress and	
Technician (EMT) /		hazardous conditions.	
Paramedic: EMTs and			
paramedics respond to		Peacekeeping Missions:	
medical emergencies.		These deployments can	
providing life-saving care on		involve working in conflict	
the scene and during transport		areas to maintain peace and	
to medical facilities.		security.	
Public Safety Officer: These			
officers work for city or state			
agencies to ensure community			
safety They often combine			
aspects of police and			
firefighter duties responding			
to various public safety needs			
Border Patrol Agent: These			
agents monitor and secure the			
borders of the country to			
provent illegal immigration and			
the trofficking of goods			
Loodorobin and discipling			
from IPOTC are voluable in			
this role			
	1		

# LAW & PUBLIC SAFETY

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondarv
		Environments	Opportunities in Kentucky
Firefighter: Respond to	Physical Fitness: Physical	High Stress Levels:	KCTCS Campuses
emergencies, extinguish fires,	health and fitness are crucial	Firefighting is inherently	
and rescue operations.	in particular strength,	stressful due to the nature of	Fire Science Technology
	endurance, and agility.	emergencies and the need to	KCTCS
Fire Inspector: Examine		make quick, life-saving	
buildings to ensure they	Problem-Solving Skills: The	decisions.	CPAT   KCTCS
comply with fire codes and	ability to think quickly and		
investigate the causes of fires.	solve problems under	Team-Oriented Environment:	Kentucky Universities
-	pressure is essential.	Firefighters work closely with	-
Fire Investigator: Determine		their team members. Strong	Bachelor of Science in Fire
the origin and cause of fires,	Communication Skills: Clear	camaraderie and trust are	Protection & Safety
often working closely with law	and effective communication	essential.	Engineering Technology -
enforcement.	is vital for coordinating with		Eastern Kentucky University
	team members and providing	Irregular Hours: Firefighters	
Fire Services Administrator:	clear instructions.	typically work long and	
Manage fire departments,		irregular hours, including 24-	
oversee budgets, and develop	Teamwork: Being able to work	hour shifts followed by 48 or	
policies and procedures.	well with others and	72 hours off.	
	understand the importance of		
Wildland Firefighter: Combat	each team member's role.	Physical Demands: The job is	
wildfires and work on fire		physically demanding,	
prevention in forests and	Technical Knowledge: A basic	requiring firefighters to be in	
wildlands.	understanding of science,	excellent shape.	
	particularly physics and		
Fire Engineer: Design and	chemistry.	Exposure to Hazards:	
implement fire protection		Firefighters are exposed to	
systems and safety measures	Attention to Detail: Being	various hazards, including fire,	
in buildings.	detail-oriented helps in	smoke, hazardous materials,	
	following safety protocols and	and structural collapses.	
Emergency Medical	ensuring that all equipment is		
Technician (EMT): Provide	properly maintained and used.	Variety of Tasks: The work is	
medical care in emergency		diverse and can change	
situations, often as part of a	Emotional Resilience: The	rapidly. Firefighters might	
fire department.	ability to stay calm and	respond to fires, medical	
	composed in stressful	emergencies, etc.	
Hazardous Materials	situations.		
Specialist: Handle and		Sense of Purpose: Despite	
manage hazardous materials,	Commitment to Learning:	the challenges, many	
ensuring safety and	Ability to adapt to new	firefighters find the work highly	
compliance.	techniques, technologies, and	rewarding.	
	safety procedures.		

### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Police Officer: Enforcing laws,	Critical Thinking: The ability	High Stress Levels: Law	KCTCS Campuses
responding to emergencies,	to analyze situations, make	enforcement officers often	
and protecting the community.	quick decisions, and solve	face high-stress situations,	Criminal Justice   KCTCS
	problems.	including emergencies,	
Detective/Criminal		confrontations, de-escalation	Physical Agility Test Prep -
Investigator: Investigating	Communication Skills:	of situations, and community	Kentucky Justice & Public
crimes, gathering evidence,	Strong verbal and written	policing.	Safety Cabinet
and solving cases.	communication skills are		
	essential.	Team-Oriented Environment:	Universities in Kentucky
Federal Agent: Working for		Officers work closely with their	-
agencies like the FBI, DEA, or	Physical Fitness: Law	colleagues, relying on	Bachelor of Science in
ATF, handling federal crimes	enforcement officers need to	teamwork and strong	Criminal Justice - Eastern
and investigations.	be in good physical condition	camaraderie.	Kentucky University
	to manage the physical		
Corrections Officer:	demands of the job.	Irregular Hours: Law	Criminal Justice (BS)
Supervising inmates in Jails		enforcement jobs often involve	University of Louisville
and prisons, ensuring security	Attention to Detail: Being	working irregular hours,	
and order.	detail-oriented nelps in	Including nights, weekends,	Criminology   Western
Duck ation (Double Officers	accurately documenting	and holidays. Shift work is	Kentucky University
Probation/Parole Officer:	incidents, gathering evidence,	common.	
Monitoring and assisting	and following procedures.	Evenenue to Herordo, Officaro	Criminal Justice: Northern
narola to provent reaffending	Ethical ludgments A strong	exposure to nazarus: Officers	Kentucky University
parote to prevent reomending.	ethical Judgment: A strong	are frequentity exposed to	
Forensic Science Technician:	vital for making fair and just	physical danger bazardous	
Collecting and analyzing	decisions	materials and stressful	
physical evidence from crime		situations	
scenes	Empathy and Internersonal		
3001103.	Skills: The ability to	Variety of Tasks: The job	
Fish and Game Warden:	understand and relate to	involves a wide range of tasks	
Enforcing laws related to	people from diverse	from patrolling neighborhoods	
wildlife, hunting, and fishing.	backgrounds is important.	and responding to	
matting, narrang, and normig.	Suchardense in inportanti	emergencies to conducting	
Border Patrol Agent: Securing	Stress Management: The	investigations.	
national borders and	ability to remain calm and		
preventing illegal entry.	composed under pressure.	Emotional Resilience: The	
······································		ability to handle traumatic and	
Bailiff: Maintaining order in	Teamwork: Being able to work	emotionally charged situations	
courtrooms and assisting	well with others and	is important.	
judges.	understand the importance of		
	each team member's role.	Sense of Purpose: Despite	
		the challenges, many officers	
		find the work highly rewarding.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	<b>Opportunities in Kentucky</b>
Paralegal/Legal Assistant:	Critical Thinking: The ability	High Stress Levels: Legal	KCTCS Campuses
Assisting lawyers by	to analyze complex issues,	professionals often face high-	
conducting research, drafting	evaluate arguments, and think	pressure situations, tight	Paralegal Technology   KCTCS
documents, and organizing	logically.	deadlines, and significant	
case files.		responsibilities.	Universities in Kentucky
Misting Adversion Drawiding	Strong Writing Skills: Clear		Due Level Hairs with set
Victim Advocate: Providing	and effective writing is	Detail-Oriented work:	Pre-Law-University of
viotime of orime, helping them		Lawyers and parategats must	Kentucky
navigate the legal system	research papers	as accuracy is crucial	Pre-Law Advising — University
navigate the legal system.			of Louisville
Human Resources	Reading Comprehension:	Collaborative Environment:	
Specialist: Ensuring	Law involves a lot of reading,	Legal work often involves	Pre-Law. Minor < Eastern
compliance with labor laws	including statutes, case law,	collaboration with colleagues,	Kentucky University
and handling employee	and legal texts.	clients, and other	
relations.		professionals.	Pre-Law: Northern Kentucky
	Research Skills: Proficiency		University
Compliance Officer: Ensuring	in conducting thorough and	Long Hours: Many legal	
that organizations adhere to	efficient research.	professionals work long hours,	Legal Studies, B.A.   Morehead
laws and regulations, often		including evenings and	State University   Kentucky
within corporate settings.	Public Speaking: Confidence	weekends.	Nata: Cabaala of Law account a
	and clarity in public speaking	Office Setting: Most logal	Note: Schools of Law accept a
Working with legislators to	are important.	work is conducted in office	degrees other than pre-law
research draft and analyze	Attention to Detail: Being	environments	Here are some of the most
legislation.	detail-oriented helps in	chivitoniniontis	common and beneficial
	understanding the nuances of	Professionalism and	majors for aspiring law
Court Clerk: Managing	legal texts.	Confidentiality: Maintaining a	students:
administrative tasks in	_	high level of professionalism	
courtrooms, including	Ethical Judgment: A strong	and discretion is essential	History
maintaining records and	sense of ethics and integrity is		Business
assisting judges.	crucial for making fair and just	Variety of Tasks: The job	Political Science
	decisions.	involves a wide range of tasks,	<ul> <li>English</li> </ul>
Mediator: Facilitating		from legal research and	<ul> <li>Philosophy</li> </ul>
negotiations and conflict	to management: The ability	drafting documents to client	Economics
outside of the courtroom	to manage time enectively.		
	Internersonal Skills: Good	appearances.	These majors are just a few
Policy Analyst: Researching	interpersonal skills are	Ethical Standards: Upholding	examples, and law schools
and analyzing policies, often	essential for working with	ethical standards and	value a diverse range of
for government agencies or	peers, professors, and	professional conduct is crucial	Eurther investigation by the
think tanks.	eventually clients.	in the legal field.	student into a specific School
	-	-	of Law is suggested to
			understand entrance
			requirements specific to the
			institution.

# MANUFACTURING TECHNOLOGY

#### 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 computeraided drafting (CAD). Additional concerns are site considerations

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Architectural Technologist:	Technical Skills: A strong	Office Environment: Most	KCTCS Campuses
Working with architects to	foundation in mathematics,	architectural technologists	
develop detailed construction	particularly geometry and	work in office settings, often	Architectural Technology
drawings.	algebra.	within architectural firms,	BCTC
		engineering companies, or	
Drafter/CAD Technician:	Computer Skills: Proficiency	construction firms.	Universities in Kentucky
Creating technical drawings	in computer-aided design		
and plans using (CAD)	(CAD) software and other	Collaborative Atmosphere:	Architecture Bachelors-
software.	architectural tools is essential.	Architectural technologists	University of Kentucky College
		frequently collaborate with	<u>of Design</u>
Building Inspector: Ensuring	Attention to Detail: Being	architects, engineers,	
that construction projects	detail-oriented helps in	contractors, and clients.	WKU Architectural Science
comply with building codes	creating accurate and precise		Western Kentucky University
and regulations.	architectural drawings and	Detail-Oriented Work:	
	plans.	Attention to detail is crucial in	
Construction Manager:		this field. Architectural	
Overseeing construction	Creativity: A creative mindset	technologists must ensure	
projects from start to finish.	is important for designing	accuracy to avoid mistakes.	
	innovative and aesthetically		
Project Manager:	pleasing structures.	Project-Based Work: The	
Coordinating all aspects of a		work is often project-based,	
construction project, including	Problem-Solving Skills: The	meaning that technologists	
planning, budgeting, and	ability to analyze problems	may work on multiple projects	
scheduling.	and develop effective	simultaneously.	
	solutions is crucial.		
Estimator: Calculating the		Site Visits: While much of the	
costs of construction projects,	Spatial Awareness: A good	work is office-based,	
including materials, labor, and	sense of spatial relationships	architectural technologists	
equipment.	and the ability to visualize	also conduct site visits to	
lataria <b>P</b> asistan Davidaira	three-dimensional structures	monitor construction.	
Interior Designer: Designing	from two-dimensional plans is	Our stine Backlery Och in a	
and planning the interiors of	important.	Creative Problem-Solving:	
buildings, focusing on	Operation Skiller	The Job Involves a significant	
aesmetics and functionality.	Communication Skills:	annount of creative problem-	
	Strong verbal and written	find inpovetive colutions to	
plana and programa for land			
		uesign challenges.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Civil Designer: Focuses on	Mathematics Proficiency:	Office Environment	KCTCS Campuses
creating detailed plans and	Strong understanding of	Design and Planning: Much of	
technical drawings for	algebra, geometry,	a civil designer's work involves	Civil Engineering Technology
infrastructure projects like	trigonometry, and calculus.	creating detailed plans and	KCTCS
roads, bridges, and water		designs using computer-aided	
systems using CAD software.	Science Knowledge: Basic	design (CAD) software. This is	Universities in Kentucky
	knowledge of physics and	typically done in an office	
CAD Technician: Uses	chemistry, especially related	setting.	UK - Civil Engineering
computer-aided design	to materials and forces.		
software to plan and review		Project Management:	U of L-Civil & Environmental
project designs, ensuring they	Computer Skills: Familiarity	Managing project timelines,	Engineering
meet building code	with computer-aided design	budgets, and coordinating with	
specifications.	(CAD) software and basic	other professionals.	Civil Engineering, Bachelor of
	programming.		Science Western Kentucky
Surveyor: Measures and notes		Site Visits: Civil designers	<u>University</u>
property boundaries and	Attention to Detail: Precision	frequently visit construction	
locations to determine	in measurements and designs	sites to inspect progress,	Civil Engineering Degree
building site specifications.	is crucial.	ensure compliance with	Program at Murray State
		design specifications, and	<u>University</u>
Building Engineer: Provides	Problem Solving: Ability to	address any on-site issues.	
maintenance and repair	analyze problems and develop		
services for buildings,	practical solutions.	Environmental Assessments:	
ensuring compliance with		For projects involving	
local fire and building codes.	Creativity: Innovative thinking	environmental considerations,	
	for designing efficient and	civil designers may conduct	
Water Hygiene Engineer:	effective structures.	field assessments to evaluate	
Works in water or wastewater		the impact on natural habitats	
treatment plants to oversee	Basic Engineering Principles:	and other factors.	
system operations and proper	Understanding of fundamental		
treatment protocols.	engineering concepts.	Client Interaction: Regular meetings with clients,	
	Communication Skills: Ability	government agencies, and	
	to clearly convey ideas and	community stakeholders to	
	collaborate with others.	discuss project requirements	
		and provide updates.	
	Teamwork: Civil design often		
	involves working in teams, so	Adaptability: The work	
	being able to collaborate	environment can be dynamic,	
	effectively is important.	requiring adaptability to	
		changing weather conditions,	
		tight deadlines, etc.	

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Mechanical Drafter: Prepare	Mathematical Skills: A strong	Office Settings: This is where	KCTCS Campuses
detailed working diagrams of	foundation in mathematics,	most of the design work	
machinery and mechanical	particularly in algebra,	happens. Mechanical	Computer Aided Drafting and
devices.	geometry, and trigonometry.	designers use advanced	Design   KCTCS
		software to create and test	
Mechanical Engineering	Analytical Thinking: The	their designs.	University Programs
Technician: Apply theory and	ability to analyze complex		
principles of mechanical	problems, break them down	Research and Testing Labs:	UK-Mechanical Engineering
engineering to modify,	into manageable parts, and	In these labs, designers can	Stanley and Karen Pigman
develop, test, or adjust	develop logical solutions.	turn their concepts into reality	College
machinery.		by experimenting with	
	Attention to Detail: Precision	materials and testing	Mechanical Engineering (dept)
Industrial Engineering	is vital in mechanical design to	prototypes.	- J.B. Speed School of
Technician: Apply engineering	ensure that all components fit		Engineering - University of
theory and principles to	and function correctly.	Manufacturing Floors:	Louisville
problems of industrial layout		Mechanical designers may	
or manufacturing.	Creativity: Innovative thinking	spend time on the	Mechanical Engineering
	and creativity are important for	manufacturing floor to oversee	Western Kentucky University
Electro-Mechanical	designing new products and	the production of their	
lechnician: Operate, test,	improving existing ones.	designs.	Program: Mechanical and
maintain, or adjust	To a basis of Obility of Ferry life sites	Field Assistant and a Dama	Manufacturing Engineering
unmanned, automated,	iechnical Skills: Familiarity	Field Assignments: Some	<u>Iechnology, B.S Northern</u>
servomechanical, or	with computer-aided design	projects require designers to	Kentucky University
electromechanicat	(CAD) software and other	be on-site where their designs	Department of Engineering 9
equipment.	technical tools used in	are being used.	Department of Engineering &
	hopoficial	Pomoto and Hybrid Polocy	Lipivoroity
computer aided design (CAD)	benenciat.	With the rise of digital tools	Onversity
software to create detailed	Communication Skills:	many mechanical designers	Mechanical Engineering
technical drawings and plans	Effective communication	now have the flexibility to work	Degree   Murray State
	both written and verbal is	remotely	University
Maintenance Engineer:	necessary for collaborating	Territototy.	onvoisity
Ensure that industrial	with team members	Team Collaboration:	
machinery and equipment run	with tourn monipors.	Regardless of the setting	
efficiently by performing	Problem-Solving: The ability	collaboration is key	
regular maintenance and	to identify problems.	Mechanical designers often	
repairs.	troubleshoot issues, and find	work in multidisciplinary	
	effective solutions is a key	teams, requiring effective	
Ouality Control Inspector:	aptitude for success in	communication and	
Inspect, test, sort, sample, or	mechanical design.	coordination.	
weigh nonagricultural raw	5		
materials or processed,			
machined, fabricated, or			
assembled parts or products			
for defects.			
L	1	1	1

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
CNC Machine Operator:	Mathematical Skills: A strong	Manufacturing Plants: CNC	KCTCS Campuses
Operates CNC machines to	foundation in mathematics,	professionals often work in	
produce parts and	particularly in geometry,	large manufacturing facilities.	Computerized Manufacturing
components according to	algebra, and trigonometry, is	These environments can be	and Machining   KCTCS
specifications.	essential.	fast-paced and require	
		attention to detail.	
CNC Machinist: Sets up,	Technical Aptitude: An		
operates, and maintains CNC	interest in and understanding	Machine Shops: Smaller	
machines, ensuring precision	of how machines and tools	machine shops provide a more	
and quality in the	work and the ability to read	intimate setting for CNC	
manufacturing process.	and interpret technical	operators.	
	drawings and blueprints.		
CNC Programmer: Writes and		Research and Development	
tests programs for CNC	Attention to Detail: Precision	Labs: In R&D labs, CNC	
machines, translating design	is crucial in CNC work.	professionals work on	
specifications into machine	Students should be	developing new machining	
instructions.	meticulous and able to focus	techniques and improving	
	on detailed tasks.	existing processes.	
lool and Die Maker: Designs	Due blance O a bring of The schilling		
and constructs precision	Problem-Solving: The ability	Educational Institutions:	
toots, dies, and lixtures used	to troubleshoot and solve	Some CINC professionals work	
in manufacturing.	problems that arise during the	In educational settings,	
Manufacturing Engineers	machining process.	teaching students about CNC	
Develops and improves	Computer Skiller Eamiliarity		
manufacturing processes	with computer operations and	processes.	
often involving CNC	software	Field Service: Field service	
technology	software.	technicians travel to different	
teennotogy.	Mechanical Skills: Hands-on	locations to install maintain	
Process Engineer: Focuses	experience with tools and	and renair CNC machines	
on optimizing manufacturing	machinery and an		
processes, including the use	understanding of mechanics &	Quality Control	
of CNC machines.	how machines operate.	Departments: In quality	
		control, CNC professionals	
Field Service Technician:	Spatial Awareness: The ability	ensure that manufactured	
Installs, maintains, and repairs	to visualize and understand	parts meet specified	
CNC machines at various	the spatial relationships	standards.	
locations.	between objects.		
	-	Prototyping Shops: These	
Quality Control Inspector:	Manual Dexterity: Good	shops focus on creating	
Ensures that manufactured	hand-eye coordination and the	prototypes for new products.	
parts meet quality standards	ability to handle tools with		
and specifications.	precision.		

#### 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 predetermined 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
CNC Machine Operator:	Mathematical Skills: A strong	Manufacturing Plants: CNC	KCTCS Campuses
Operates CNC machines to	foundation in mathematics,	professionals often work in	
produce parts and	particularly in geometry,	large manufacturing facilities.	Computerized Manufacturing
components according to	algebra, and trigonometry, is	These environments can be	and Machining   KCTCS
specifications.	essential.	fast-paced and require	
		attention to detail.	
CNC Machinist: Sets up,	Technical Aptitude: An		
operates, and maintains CNC	interest in and understanding	Machine Shops: Smaller	
machines, ensuring precision	of how machines and tools	machine shops provide a more	
and quality in the	work and the ability to read	intimate setting for CNC	
manufacturing process.	and interpret technical	operators.	
	drawings and blueprints.		
CNC Programmer: Writes and		Research and Development	
tests programs for CNC	Attention to Detail: Precision	Labs: In R&D labs, CNC	
machines, translating design	is crucial in CNC work.	professionals work on	
specifications into machine	Students should be	developing new machining	
instructions.	meticulous and able to focus	techniques and improving	
Teel and Die Makers Designs	on detailed tasks.	existing processes.	
and constructs precision	Drahlam Calving The ability	Educational Institutional	
and constructs precision	to troublochest and solve	Some CNC professionale work	
in monufacturing	not have that arise during the	in educational acttings	
in manufacturing.	problems that arise during the	teaching students about CNC	
Manufacturing Engineer	machining process.	technology and machining	
Develops and improves	Computer Skills: Familiarity	processes	
manufacturing processes	with computer operations and	processes.	
often involving CNC	software	Field Service: Field service	
technology	Software.	technicians travel to different	
	Mechanical Skills: Hands-on	locations to install, maintain.	
Process Engineer: Focuses	experience with tools and	and repair CNC machines.	
on optimizing manufacturing	machinery and an		
processes, including the use	understanding of mechanics &	Quality Control	
of CNC machines.	how machines operate.	Departments: In quality	
	·	control, CNC professionals	
Field Service Technician:	Spatial Awareness: The ability	ensure that manufactured	
Installs, maintains, and repairs	to visualize and understand	parts meet specified	
CNC machines at various	the spatial relationships	standards.	
locations.	between objects.		
		Prototyping Shops: These	
Quality Control Inspector:	Manual Dexterity: Good	shops focus on creating	
Ensures that manufactured	hand-eye coordination and the	prototypes for new products.	
parts meet quality standards	ability to handle tools with		
and specifications.	precision.		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	<b>Opportunities in Kentucky</b>
Electrical Technician: Works	Mathematical Skills: A solid	Residential Settings:	KCTCS Campuses
on assembling, testing, and	understanding of algebra,	Electrical technicians often	
maintaining electrical	geometry, and basic	work in homes, installing,	Electrical Technology   KCTCS
systems.	trigonometry.	repairing, and maintaining electrical systems.	
Electrician: Installs, repairs,	Technical Aptitude: An		
and maintains electrical	interest in and understanding	Commercial and Industrial	
systems in residential,	of how electrical systems and	Sites: These settings include	
commercial, and industrial	devices work.	office buildings, factories, and	
settings.		warehouses.	
	Problem-Solving: The ability		
Field Service Technician:	to troubleshoot and diagnose	Construction Sites: Electrical	
Travels to different locations to	issues with electrical systems	technicians are crucial in new	
install, repair, and maintain	and find solutions.	construction projects, where	
electrical systems and		they install wiring and	
equipment.	Attention to Detail: Precision	electrical systems from the	
	is crucial in electrical work to	ground up.	
Maintenance Technician:	ensure safety and		
Ensures that electrical	functionality.	Maintenance Facilities: In	
systems and equipment in		these settings, technicians	
facilities are functioning	Manual Dexterity: Good	perform routine maintenance	
properly and performs routine	hand-eye coordination and the	and repairs on electrical	
maintenance.	ability to handle tools and materials.	systems and equipment.	
Instrumentation Technician:		Field Service: Some electrical	
Specializes in installing and	Computer Skills: Familiarity	technicians work as field	
maintaining instruments and	with computer operations and	service technicians, traveling	
control systems.	software, as modern electrical	to different locations to install,	
	systems often involve	maintain, and repair electrical	
Automation Technician:	computer-based controls and	systems.	
Works with automated	diagnostics.		
systems and robotics,	-	Laboratories and Testing	
ensuring they operate	Safety Awareness: A strong	Facilities: In these	
correctly.	understanding of safety	environments, technicians	
	protocols.	test and develop new	
Cable Technician: Installs		electrical components and	
and repairs data, telephone,	Mechanical Skills: Hands-on	systems.	
and security cable networks.	experience with tools and		
	machinery can be very		
Electrical Inspector: Inspects	beneficial.		
electrical systems and			
installations to ensure they			
meet safety and code			
requirements.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Maintenance Machinist:	Mechanical Aptitude:	Manufacturing Plants: These	KCTCS Campuses
Works on maintaining and	Understanding how machines	are often well-lit but noisy	
repairing machinery, ensuring	and tools work that includes	environments where	Industrial Maintenance
that all equipment operates	knowledge of basic	machinists maintain and	<u>Technology   KCTCS</u>
efficiently and safely.	mechanics.	repair machinery that keeps	
		production lines running	
CNC Machinist: Operates and	Mathematical and Computer	smoothly.	
maintains CNC machines,	Skills: Proficiency in math		
ensuring precision in the	(algebra, geometry, and	Maintenance Shops: These	
manufacturing process.	trigonometry) & familiarity with	are dedicated areas within	
	various computer	larger facilities where	
Industrial Maintenance	applications.	machinists perform routine	
Technician: Focuses on the		maintenance and repairs.	
upkeep and repair of industrial	Attention to Detail: Being		
equipment, often working in	meticulous and detail-	Construction Sites:	
manufacturing plants.	oriented helps in creating	Machinists working on	
	accurate parts.	construction sites deal with	
Tool and Die Maker: Designs		heavy machinery like	
and constructs precision	Problem-Solving: The ability	bulldozers and cranes. The	
tools, dies, and fixtures used	to troubleshoot that involves	work is often outdoors,	
in manufacturing.	critical thinking and the ability	exposing them to varying	
	to diagnose issues and find	weather conditions and	
Mechanical Technician:	solutions.	rugged terrain.	
Provides technical support for			
mechanical systems,	Manual Dexterity: Good	Power Generation Facilities:	
including installation,	hand-eye coordination and	In these settings, machinists	
maintenance, and	steady hands are necessary	maintain and repair	
troubleshooting.	for operating machinery and	equipment used in power	
	handling tools.	generation, such as turbines	
Field Service Technician:		and generators.	
Travels to different locations to	Technical Reading Skills: The		
install, maintain, and repair	ability to read and understand	Factories: Similar to	
machinery and equipment.	technical manuals, blueprints,	manufacturing plants,	
	and schematics.	factories can be noisy and	
Quality Control Inspector:		require machinists to work	
Ensures that manufactured	Safety Awareness: A strong	with a variety of machinery.	
parts meet quality standards	understanding of safety		
and specifications3.	protocols and the ability to	On-Call and Shift Work: Many	
	follow them.	machinists work full-time and	
		may be on call for night or	
	Physical Stamina: Machinists	weekend shifts. Overtime is	
	often spend long hours	common, especially when	
	standing and operating	urgent repairs are needed.	
	machinery.		

### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	-	Environments	Opportunities in Kentucky
Industrial Maintenance	Mechanical Aptitude: An	Manufacturing Plants:	KCTCS Campuses
Technician: Responsible for	understanding of how	Mechanics work on	
maintaining and repairing	machines and tools work, and	maintaining and repairing	Industrial Maintenance
industrial equipment,	an interest in fixing and	equipment like conveyor belts	Technology   KCTCS
including machinery used in	maintaining them.	and robotic arms to keep	
manufacturing and		production lines running	
production.	Problem-Solving Skills: The	smoothly.	
	ability to diagnose issues and		
HVAC Technician: Specializes	come up with effective	Construction Sites:	
in heating, ventilation, and air	solutions.	Mechanics here deal with	
conditioning systems,		heavy machinery such as	
ensuring they operate	Attention to Detail: Precision	bulldozers, cranes, and	
efficiently and safely.	is crucial when working with	excavators. The work is often	
	machinery to ensure safety	outdoors, exposing them to	
Automotive Service	and functionality.	varying weather conditions	
Technician: Focuses on the		and rugged terrain.	
maintenance and repair of	Manual Dexterity: Good		
vehicles, including	hand-eye coordination and the	Power Generation Facilities:	
troubleshooting and fixing	ability to use tools and	These settings involve	
mechanical issues.	equipment effectively.	maintaining and repairing	
		equipment used in power	
Facilities Maintenance	Basic Math Skills:	plants. The work can be both	
Technician: Works in	Understanding	indoors and outdoors,	
commercial or residential	measurements, calculations,	requiring adherence to strict	
buildings, handling repairs and	and basic algebra is important	safety protocols.	
maintenance tasks such as	for technical tasks.		
plumbing, electrical systems,		Maintenance Shops: These	
and general upkeep.	Technical Reading Skills: The	are more controlled	
	ability to read and	environments where	
Certified Maintenance and	comprehend technical	mechanics work on a variety of	
Reliability Technician	manuals and schematics.	equipment brought in for	
(CMRT): This role involves		repair.	
preventive, predictive, and	Physical Stamina: The job		
corrective maintenance to	often requires standing for	Service Industry Settings:	
ensure equipment reliability.	long periods, lifting heavy	This includes hotels,	
	objects, and working in various	restaurants, hospitals, and	
Certified Apartment	environments.	office buildings. Mechanics	
Maintenance lechnician		ensure that facilities are	
(CAMI): Specializes in	Communication Skills: Being	functional, safe, and clean,	
maintaining residential	able to communicate	aeaung with aifferent	
properties, including electrical	effectively with team members	equipment and systems daily.	
systems, HVAC, and plumbing.	and supervisors		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Welding Technician:	Mechanical Aptitude:	Manufacturing Plants: These	KCTCS Campuses
Responsible for setting up,	Understanding how machines	environments are typically	
operating, and maintaining	and tools work and the ability	indoors and involve	Welding Technology   KCTCS
welding equipment.	to troubleshoot and repair	maintaining and repairing	
	equipment.	machinery used in production.	
Maintenance Technician:			
Focuses on maintaining and	Mathematical Skills: Basic	Construction Sites: Welding	
repairing industrial equipment,	math skills, including algebra	maintenance technicians on	
including welding machines.	and geometry, are important	construction sites often work	
This role often involves	for measuring, calculating	outdoors, which means they	
preventive maintenance and	dimensions, and	are exposed to varying weather	
troubleshooting.	understanding technical	conditions.	
	drawings.		
Industrial Maintenance		Shipyards: In shipyards,	
Supervisor: Oversees	Attention to Detail: Precision	technicians work on the	
maintenance teams and	is key in welding and	maintenance and repair of	
ensures that all equipment,	maintenance work to ensure	ships and other marine	
including welding machinery,	safety and quality.	vessels. This can involve both	
is functioning correctly. This		indoor and outdoor work,	
role requires strong leadership	Manual Dexterity: Good	sometimes in challenging	
and technical skills.	hand-eye coordination and	conditions such as confined	
	steady hands are essential for	spaces or at heights.	
Fabrication Welder:	performing precise welding		
Specializes in creating metal	tasks.	Automotive Industry:	
structures and components by		lechnicians in this field work	
cutting, shaping, and	Problem-Solving: The ability to	on the maintenance of welding	
assembling metal parts.	diagnose issues and come up	equipment used in the	
Field Coursing Technicians	with effective solutions.	production and repair of	
Field Service Technician:		vehicles.	
Iravels to different sites to	Physical Stamina: welding	A	
Install, maintain, and repair	and maintenance work can be	Aerospace Industry: working	
welding equipment. This role	physically demanding,	In aerospace involves	
often requires problem-solving	requiring strength and	maintaining wetding	
skills and the ability to work	endurance.	equipment used in the	
independentty.	Technical Decding Skiller The	production of ancialt and	
Quality Control Increatory	ability to rood and interpret	spaceciait.	
Ensures that wolded products	blueprinte schematics and	Oil and Gas Industry	
Elisties that welded products	tooppiool monulo is	Toobhioiono in this industry	
specifications documenting	necessary for understanding	may work on oil rigs, both	
findings	and executing tasks correctly	onshore and offshore	
internatio.	and excouting tasks concetty.		

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Sheet Metal Worker: Involves	Mechanical Aptitude:	Fabrication Shops: Many	KCTCS Campuses
fabricating, installing, and	Understanding how tools and	sheet metal technicians work	
maintaining sheet metal	machinery work is crucial. This	in fabrication shops where	Industrial Maintenance
products, such as ducts for	includes the ability to	they cut, bend, and shape	Technology < KCTCS
HVAC systems, roofing, and	troubleshoot and repair	metal pieces.	
siding.	equipment.		
		Construction Sites: Some	
HVAC Technician: Specializes	Mathematical Skills: Basic	technicians work on	
in installing and maintaining	math skills, including algebra	construction sites, installing	
heating, ventilation, and air	and geometry, are important	metal components in	
conditioning systems, working	for measuring, calculating	buildings. This can involve	
with sheet metal ducts and	dimensions, and interpreting	working at heights and in	
components.	technical drawings.	various weather conditions.	
Fabricator: Works in	Attention to Detail: Precision	Manufacturing Plants: In	
manufacturing settings to	is key in sheet metal work to	manufacturing settings, sheet	
create metal parts and	ensure accuracy and quality in	metal technicians might be	
structures.	fabrication and installation.	involved in producing parts for	
Fatimator: Calquiatos the east	Manual Deviterity (Cood	machinery, vehicles, or other	
ef meteriale, labor, and time	hand ave accreting: Good	products.	
or materials, labor, and time	nand-eye coordination and	HV/AC Installation:	
projects often working closely	steady fiallus are essential for	Toobaioiono working in HVAC	
with clients and project	shoot motol	(besting ventilation and sir	
monogoro1	Sheet metat.	(neating, ventilation, and an	
managers I.	Broblem-Solving: The ability	ductwork in residential	
Project Manager: Oversees	to diagnose issues and come	commercial and industrial	
sheet metal projects from	up with effective solutions is	buildings	
start to finish ensuring they	vital in this field	bullungs.	
are completed on time and		Maintenance and Benair:	
within hudget	Physical Stamina: Sheet	Some technicians specialize in	
Millin Budgott	metal work can be physically	maintaining and renairing	
Quality Control Inspector:	demanding, requiring strength	existing metal structures or	
Ensures that sheet metal	and endurance.	systems. This can involve	
products meet industry		troubleshooting and fixing	
standards and specifications	Technical Reading Skills: The	issues on-site, which may	
through inspections and	ability to read and interpret	require travel.	
testing.	blueprints, schematics, and	• •	
5	technical manuals.		

#### 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 work procedure specifications (WPS)

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Welder: This is the most direct	Manual Dexterity: Welding	Indoor Work: Many welders	KCTCS Campuses
career path. Welders work in	requires precise hand-eye	work indoors in manufacturing	
various industries, including	coordination and steady	plants, automotive shops, and	Welding Technology   KCTCS
construction, manufacturing,	hands to manipulate tools and	industrial facilities. These	
and shipbuilding, to join metal	materials accurately	environments can be noisy	
parts using different welding		and may expose workers to	
techniques.	Attention to Detail: Being	hazardous fumes, bright lights,	
	able to focus on small details	and high heat.	
Welding Inspector:	is crucial for creating strong,	<b>•</b> • • • • • • • • • • •	
Inspectors ensure that welds	high-quality welds and	Outdoor Work: Welders	
meet industry standards and	ensuring safety.	working on construction sites,	
specifications. They often	Mathematical Chilles Desig	pipelines, or snipyards often	
work for construction	mathematical Skills: Basic	work outdoors. This can	
companies, manufacturing	main skills, including	Involve exposure to various	
	geometry and measurements,	beights, and sometimes in	
agencies.	bluoprints and calculating		
Welding Technician:	dimensions	commed spaces.	
Technicians assist in the	umensions.	Confined Spaces: Some	
development and testing of	Technical Antitude: An	welding tasks require working	
welding processes and	interest in and understanding	in tight or enclosed spaces	
equipment. They may work in	of how machines and tools	such as inside tanks, small	
research and development or	work can be very beneficial.	compartments, or under	
quality control.		water.	
4	Physical Stamina: Welding		
Pipe Welder: Specializing in	can be physically demanding,	Shift Work: Welding jobs may	
welding pipes, these	requiring strength, endurance,	require working in shifts,	
professionals are often	and the ability to work in	including nights and	
employed in the oil and gas	various positions and	weekends. Overtime is	
industry, water treatment	environments.	common, and some welders	
facilities, and power plants.		may work up to 12-hour shifts.	
	Problem-Solving: Welders		
Structural Welder: These	often need to troubleshoot	Physical Demands: Welding	
welders work on large	issues and find solutions on	is physically demanding work	
structures such as bridges,	the spot.	that often involves lifting heavy	
buildings, and ships. They		materials, standing for long	
often work at heights and in	Safety Awareness: A strong	periods, and working in	
various weather conditions.	understanding of safety	awkward positions. Physical	
Falssianten Falssianten austra	protocols and the ability to	stamina and strength are	
rabricator: Fabricators create	follow them meticulously.	important.	
	Communication Skiller Boing	Sofoty Hozordo: Woldoro oro	
blueprints and specifications	able to communicate	exposed to various bazards	
They work in manufacturing	effectively with team members	including intense light from the	
construction and custom	and supervisors is important	welding arc hot materials and	
metal shops.	for collaboration and	the risk of burns and eve	
	understanding project	injuries.	
Underwater Welder: This	requirements.	,	
specialized field involves			
welding underwater, often for	Willingness to Learn: A		
the construction and repair of	positive attitude towards		
ships, pipelines, and offshore	learning new techniques.		
oil rigs.			

#### 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 complete product.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Woodworker: Operate tools	Manual Dexterity: Working	Indoor Work: Most wood	KCTCS Campuses
and machines to manufacture	with wood requires precise	manufacturing takes place	
a variety of wood parts and	hand-eye coordination and	indoors in factories or	Manufacturing Engineering
products, including furniture	fine motor skills to operate	workshops. These	Technology   KCTCS
and cabinetry.	tools and machinery	environments can be noisy	
	accurately.	due to machinery and may	
Cabinetmaker/Bench	-	have high levels of wood dust.	
Carpenter: Specialize in	Attention to Detail: Ability to	_	
creating and assembling	focus on small details is	Physical Demands: The work	
cabinets and other wood	crucial for creating high-	can be physically demanding,	
products.	quality wood products and	involving lifting heavy	
	ensuring precision in	materials, standing for long	
Machinery Maintenance	measurements and cuts.	periods, and operating	
Technician: Install, maintain,		machinery.	
and repair industrial	Mathematical Skills: Basic	2	
machinery used in wood	math skills, including	Safety Hazards: There are	
manufacturing1.	geometry and measurements,	several safety hazards in wood	
5	are important for interpreting	manufacturing, including the	
CAD Designer: Use computer-	blueprints and calculating	risk of cuts, amputations, and	
aided design (CAD) software to	dimensions.	eve injuries from machinery.	
create detailed drawings and			
plans for wood products and	Technical Aptitude: An	Exposure to Chemicals:	
manufacturing processes.	interest in and understanding	Workers may be exposed to	
	of how machines and tools	chemicals used in wood	
Supervisor: Lead a team of	work.	finishing, such as stains.	
workers, ensuring that		varnishes, and adhesives.	
production goals are met, and	Physical Stamina: Wood		
safety protocols are followed.	manufacturing can be	Temperature Variations:	
	physically demanding.	Depending on the facility.	
Manufacturing Manager:	requiring strength, endurance.	there may be significant	
Oversee the production	and the ability to stand for long	temperature variations.	
process manage staff and	periods and lift heavy		
ensure that products meet	materials	<b>Benetitive Tasks:</b> Many tasks	
quality standards.		in wood manufacturing are	
quality standards?	Problem-Solving: The ability	repetitive, such as cutting.	
Operations Director: Manage	to troubleshoot issues and	sanding and assembling	
the overall operations of a	find solutions is important for	parts. This can lead to	
wood manufacturing facility	maintaining workflow and	repetitive strain injuries if	
including production logistics	quality	proper ergonomic practices	
and quality control	quality.	are not followed	
	Creativity: A creative mindset		
	can bein in designing and		
	crafting unique wood		
	nroducts		
	p.00000.		
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# MEDIA ARTS CAREER PATHWAYS

#### 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

Career Choices	Antitudes Needed	Common Work	Postsecondary
Career Choices	Aptitudes Needed	Environments	Opportunities in Kentucky
Cinematographer: Also	Creativity: A strong sense of	On-Location Shooting: Many	KCTCS Campuses
known as a Director of	creativity is essential for	cinematographers and camera	Keres campuses
Photography	developing unique visual	operators work on location	Filmmaking - Cinematic Arts I
cinematographers are	concepts and storytelling	which can involve traveling to	KOTOS
responsible for conturing the	concepts and storytetting.	verious sites, working	<u>Keres</u>
visual elements of a film or	Technical Skiller Familiarity	outdoorg and dogling with	Vieual Communication
video	with compared lighting	different weether conditions	<u>Visual Communication -</u>
video.	with callelas, ugitting	different weather conditions.	
Comerce Oneretery Operate	equipment, and editing	Studio Works Somo work in	Ploduction KCICS
Camera Operator: Operate	software is important.	Studio work: Some work is	University Dressners
cameras for film, television, or	Attended Batally Devision	done in studios, where the	University Programs
video productions, ensuring	Attention to Detail: Precision	environment is more	
that the shots meet the	is crucial in capturing high-	controlled. This can include	UK-Video and Filmmaking
director's vision.	quality footage, editing, and	sound stages for filming and	College of Fine Arts
	ensuring continuity in scenes.	editing suites for post-	
Video Editor: Edit raw footage		production work.	Media, Journalism & Digital
into a polished final product,	Visual Awareness: An eye for		Storytelling Programs   Asbury
adding effects, transitions,	composition, color, and	Irregular Hours: The nature of	<u>University</u>
and sound to create a	lighting helps in creating	film and video production	
cohesive story.	visually appealing shots.	often requires working	WKU Film   Western Kentucky
		irregular hours, including	<u>University</u>
Production Assistant: Assist	Communication Skills:	nights, weekends, and	
in various aspects of	Effective communication is	holidays.	
production, from setting up	important for collaborating		
equipment to managing	with directors, actors, and	Physical Demands: The job	
logistics on set.	crew members.	can be physically demanding,	
		involving carrying heavy	
Lighting Technician: Design	Problem-Solving: The ability to	equipment, & standing for long	
and set up lighting for film and	troubleshoot technical issues	periods	
video productions.	and find creative solutions.		
		Collaborative Environment:	
Sound Designer: Create and	Passion for Storytelling: A	Film and video production is	
manipulate audio elements for	genuine interest in storytelling	highly collaborative, requiring	
film, television, and video	and a passion for film and	effective communication and	
productions, ensuring high-	video production.	teamwork with directors,	
quality sound2.		producers, actors, and other	
. ,		crew members.	
Director: Oversee the creative			
aspects of a film or video			
production.			
Motion Graphics Designer:			
Create animated graphics and			
visual effects for film			
television, and online content			
<ul> <li>Video Editor: Edit raw footage into a polished final product, adding effects, transitions, and sound to create a cohesive story.</li> <li>Production Assistant: Assist in various aspects of production, from setting up equipment to managing logistics on set.</li> <li>Lighting Technician: Design and set up lighting for film and video productions.</li> <li>Sound Designer: Create and manipulate audio elements for film, television, and video productions, ensuring high- quality sound2.</li> <li>Director: Oversee the creative aspects of a film or video production.</li> <li>Motion Graphics Designer: Create animated graphics and visual effects for film, television, and online content.</li> </ul>	<ul> <li>quality lootage, editing, and ensuring continuity in scenes.</li> <li>Visual Awareness: An eye for composition, color, and lighting helps in creating visually appealing shots.</li> <li>Communication Skills: Effective communication is important for collaborating with directors, actors, and crew members.</li> <li>Problem-Solving: The ability to troubleshoot technical issues and find creative solutions.</li> <li>Passion for Storytelling: A genuine interest in storytelling and a passion for film and video production.</li> </ul>	editing suites for post- production work. Irregular Hours: The nature of film and video production often requires working irregular hours, including nights, weekends, and holidays. Physical Demands: The job can be physically demanding, involving carrying heavy equipment, & standing for long periods Collaborative Environment: Film and video production is highly collaborative, requiring effective communication and teamwork with directors, producers, actors, and other crew members.	Contege of Fine Arts Media, Journalism & Digital Storytelling Programs   Asbury University WKU Film   Western Kentucky University

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Graphic Designer: Create	Creativity: A strong sense of	Work Setting: Most graphic	KCTCS Campuses
visual concepts for	creativity, an eye for design,	designers work indoors, often	
advertisements, brochures,	and the ability to think outside	in office settings.	Graphic Design   BCTC
magazines, and corporate	the box and come up with		
reports.	unique ideas.	Work Hours: Graphic	Graphic Design and Library
		designers usually work full-	<u>Technology &lt; KCTCS</u>
Web Designer: Design and	Artistic Skills: Basic drawing	time, but part-time and	
create websites, ensuring they	and sketching skills and	freelance opportunities are	University Programs
are visually appealing and	understanding color theory,	also common. They may need	
user-friendly.	composition, and typography.	to work overtime to meet	UK-Graphic Design   College of
		deadlines.	<u>Fine Arts</u>
UX/UI Designer: Focus on the	Technical Proficiency:	• • • • • • • • • •	
user experience and interface	Familiarity with graphic design	Social Interaction: The job	U of L BFA Graphic Design
design for websites, apps, and	software such as Adobe	involves a high level of social	Irack — Hite Institute of Art
other digital products.	Photoshop, Illustrator, and	contact. Designers regularly	and Design
Discher Falte zu Mardiferen al	InDesign.	communicate with clients,	One while Desire LIM/s shows
Photo Editor: Modify and	Attention to Details Devicing	supervisors, and team	Graphic Design   Western
ennance photographs for use	Attention to Detail: Precision	members via email, phone,	<u>Kentucky University</u>
in publications, websites, and	and allention to detail are	and in person.	
marketing materials.	essentiat for creating polished	<b>Physical Activities:</b> The work	
Brand Identity Designer:	and professional designs.	often involves repetitive tasks	
Develop logos, color schemes	Communication Skills: The	such as drawing sketching	
and visual styles that	ability to communicate ideas	and using a computer mouse	
represent a company's brand	clearly and effectively both	& keyboard	
represent a company s bland.	visually and verbally. This		
Illustrator: Create original	includes listening to feedback	Creativity and Flexibility:	
artwork for books magazines	and collaborating with others	Designers have the	
advertisements, and digital		opportunity to express	
media.	Time Management: Good	themselves creatively. They	
	organizational and time	often have some control over	
Motion Graphics Designer:	management skills help in	the direction of their work,	
Design animated graphics for	meeting deadlines and	although they must meet	
videos, television, and online	managing multiple projects.	client needs and expectations.	
content.			
	Adaptability: Being open to	Stress and Deadlines: The job	
Freelance Designer: Work	learning new techniques and	can be stressful due to	
independently with various	tools as the field of graphic	frequent time pressure and the	
clients on a range of design	design is constantly evolving.	need to meet strict deadlines.	
projects2.		The work environment can be	
		competitive.	

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Social Media Specialist:	Creativity: A strong sense of	Work Environment:	KCTCS Campuses
Responsible for developing	creativity and the ability to	Interactive media	
and implementing social	come up with innovative ideas	professionals often work in	Multimedia   KCTCS
media strategies to increase	for interactive content.	office settings, creative	
brand awareness and		studios, or remotely. The	University Programs
engagement.	Technical Proficiency:	environment is typically	
	Familiarity with digital tools	collaborative.	UK-Media Arts & Studies
Animator: Creates animations	and software such as Adobe		
and visual effects for various	Creative Suite (Photoshop,	Work Hours: Standard work	Department of Art & Design
media, including films, video	Illustrator, After Effects), video	hours are common, but	Western Kentucky University
games, and websites.	editing software, and web	overtime may be required to	
	development tools.	meet deadlines.	Visual Communication Design
Video Editor: Edits and			(BA, BFA): Northern Kentucky
assembles recorded footage	Artistic Skills: Basic skills in	Physical Demands: The job	University
into finished products suitable	design, and animation and	usually involves extended	
for broadcasting.	understanding color theory,	periods of sitting and working	
	composition, and typography.	on a computer.	
Web Designer: Designs and			
creates websites, ensuring	Problem-Solving: The ability	Social Interaction: High levels	
they are visually appealing and	to solve technical and creative	of social interaction are	
user-friendly.	problems efficiently is key.	common, as professionals	
		frequently collaborate with	
Digital Advertising	Attention to Detail: Precision	colleagues, clients, and	
Specialist: Develops and	and attention to detail are	stakeholders.	
manages online advertising	crucial for creating polished		
campaigns to promote	and professional interactive	Creativity and Innovation:	
products or services.	media projects.	The field demands a high	
		degree of creativity and	
Multimedia Graphic	Time Management: Good	innovation.	
Designer: Creates visual	organizational and time		
content for various media,	management skills help in	Stress and Deadlines: The job	
including print, digital, and	meeting deadlines and	can be stressful due to tight	
social media.	managing multiple projects.	deadlines and the need to	
		deliver high-quality work.	
Video Game Designer:	Interest in Technology: An		
Designs the core features of	interest in technology and	Technology Use: Proficiency	
video games, including	staying updated on the latest	with various digital tools and	
gameplay mechanics,	trends and tech.	software is essential.	
storylines, and character			
development.			

# 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. 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Automotive Service	Mechanical Aptitude: A	Work Environment:	KCTCS Campuses
Technician: Diagnose, adjust,	natural interest in how things	Technicians typically work in	
repair, or overhaul automotive	work and the ability to	repair shops, service centers,	Automotive Technology
vehicles.	understand mechanical	or dealerships. These	KCTCS
	systems.	environments can be noisy	
Maintenance Technician:		and busy.	
Perform routine maintenance	Problem-Solving: The ability	-	
and minor repairs on vehicles.	to diagnose and troubleshoot	Physical Demands: The job is	
·	issues efficiently.	physically demanding,	
Service Advisor: Act as a		requiring technicians to lift	
liaison between customers	Attention to Detail: Precision	heavy parts, stand for long	
and the service department,	and attention to detail are	periods, and work in various	
advising on necessary repairs	important for performing	positions.	
and maintenance.	accurate repairs and		
	maintenance.	Safety Considerations: Safety	
Parts Specialist: Manage and		is a top priority due to the	
supply automotive parts for	Technical Proficiency: Basic	potential hazards, such as	
repairs and maintenance.	knowledge of automotive	exposure to chemicals, hot	
	systems and components, as	surfaces, sharp objects, and	
Automotive Glass Installer	well as the ability to use	heavy machinery.	
and Repairer: Replace or	diagnostic tools and		
repair broken windshields and	equipment.	Work Hours: Standard work	
window glass in motor		hours are common, but	
vehicles1.	Manual Dexterity: Good	overtime may be necessary,	
	hand-eye coordination and the	especially during busy periods.	
Express Service Technician:	ability to work with small parts		
Specialize in quick, routine	and tools.	Social Interaction:	
services such as oil changes,		Technicians frequently interact	
tire rotations, and basic	Computer Literacy: Modern	with customers, service	
inspections	vehicles often require the use	advisors, and colleagues.	
	of diagnostic software and		
	other computer-based tools.	Tools and Technology: The	
		job involves using a variety of	
	Physical Stamina: The job can	tools and diagnostic	
	be physically demanding,	equipment. Staying up-to-	
	requiring the ability to lift	updated with the latest	
	heavy parts, stand for long	automotive technology and	
	periods, and work in various	repair techniques is essential.	
	positions.		
	Time Management: Good		
	organizational and time		
	management skills help in		
	managing multiple tasks and		
	meeting deadlines.		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Automotive Service	Mechanical Aptitude: A	Work Environment:	KCTCS Campuses
Technician: Diagnose, repair,	natural interest in how things	Technicians typically work in	
and maintain vehicles,	work and the ability to	repair shops, service centers,	<u>Automotive Technology  </u>
ensuring they run efficiently	understand mechanical	or dealerships. These	KCTCS
and safely.	systems.	environments can be noisy	
		and busy. Additionally, while	
Automotive Repair	Problem-Solving: The ability	modern shops are	
Technician: Specialize in	to diagnose and troubleshoot	temperature controlled, some	
specific areas of vehicle repair,	issues efficiently.	older shops may not be.	
such as brakes, transmissions,			
or air conditioning systems.	Attention to Detail: Precision	Physical Demands: The job is	
	and attention to detail are	physically demanding,	
Heavy Equipment Mechanic:	important for performing	requiring technicians to lift	
Work on larger vehicles and	accurate repairs and	heavy parts, stand for long	
machinery, such as trucks,	maintenance.	periods, and work in various	
buses, and construction		positions.	
equipment.	Technical Proficiency: Basic		
	knowledge of automotive	Safety Considerations: Safety	
Parts Specialist: Manage and	systems and components, as	is a top priority due to the	
supply automotive parts for	well as the ability to use	potential hazards, such as	
repairs and maintenance.	diagnostic tools and	exposure to chemicals, hot	
	equipment.	surfaces, sharp objects, and	
Iransmission lechnician:	Manual Data sites Oraci	heavy machinery.	
Specialize in the repair and	Manual Dexterity: Good	We delle some Oten de advise de	
maintenance of vehicle	hand-eye coordination and the	Work Hours: Standard work	
transmission systems.	ability to work with small parts	nours are common, but	
Comise Advisory Astes a	and tools.	overtime may be necessary,	
Service Advisor: Act as a	Oomenestaa Litaas een Madaaa	especially during busy periods.	
liaison between customers	Computer Literacy: Modern	Conicl Internetion.	
and the service department,	of diagnostic offering and	Social Interaction:	
advising on necessary repairs	of diagnostic software and		
and maintenance.	other computer-based tools.	with customers, service	
Automotive Class Installer	<b>Physical Stamina:</b> The job can	auvisors, and colleagues.	
and Penairer: Penlace or	he physically demanding	Tools and Technology: The	
repair broken windshields and	requiring the ability to lift	ich involves using a variety of	
window glass in motor	heavy parts stand for long	tools and diagnostic	
vehicles	neriods and work in various	equipment Staving up-to-	
vomotos.	nositions	undated with the latest	
	positiono.	automotive technology and	
	Time Management: Good	repair techniques is essential	
	organizational and time		
	management skills help in		
	managing multiple tasks and		
	meeting deadlines.		
		1	l

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondarv
	• • • • • • • • • •	Environments	<b>Opportunities in Kentucky</b>
Automotive Engineer:	Strong Foundation in Math	Office Environment: Many	University Programs
Specializes in the design,	and Science: Proficiency in	automotive engineers spend a	
development, and	subjects like calculus,	significant amount of time in	UK-Mechanical Engineering
manufacturing of vehicles.	physics, and chemistry.	an office setting, working on	Academics
		computer-aided design (CAD)	
Design Engineer: Focuses on	Analytical and Problem-	software, simulations, and	J.B. Speed School of
the conceptualization and	Solving Skills: The ability to	other engineering tools.	Engineering - University of
design of vehicles.	analyze complex problems,		Louisville
	think critically, to develop	Manufacturing Plants:	
Manufacturing Engineer:	innovative solutions.	Engineers often visit	School of Engineering and
Develops and optimizes		manufacturing plants to	<u>Applied Sciences &lt; Western</u>
manufacturing processes to	Mechanical Aptitude: A	oversee the production	Kentucky University
ensure efficient production.	natural understanding of how	process, troubleshoot issues,	
	machines and mechanical	and ensure quality control.	<u>Engineering Technology, B.S.  </u>
Test Engineer: Conducts	systems work.		Morehead State University
environmental, stress, and		Testing Facilities: Engineers	Kentucky
performance testing to ensure	Technical Skills: Basic	work in testing facilities to	
vehicles meet design	knowledge of computer-aided	conduct performance, safety,	Department of Engineering &
requirements.	design (CAD) software and	and durability tests on vehicles	<u>Technology - Eastern Kentucky</u>
	other engineering tools.	and components.	University
Quality Engineer: Ensures			
that all products meet the	Attention to Detail: Precision	Research and Development	Mechanical & Manufacturing
company's production	is important in engineering to	Labs: In R&D labs, engineers	Engineering lechnology Major:
standards.	ensure designs and systems	tocus on developing new	Northern Kentucky University
Induction Fracing and Income	function correctly and safely.	technologies and materials.	
Industrial Engineer: Improves	Creativity and Innevations	Field Werks Same automative	
the enciency of production	The ability to think erectively	character and a solution of the second secon	
methods and oversees quality	and some up with powidees is	which involves traveling to	
control standards.	and come up with new ideas is	different leastions to test	
Matariala Davalanmant	improving outomotivo	unierent locations to test	
Engineer: Development		conditions	
selects new materials to meet	technologies.	conditions.	
design and performance	Time Management and	Collaboration and	
	Organization: The ability to		
requirements	manage time efficiently and	angineering is collaborative	
Process Planner: Coordinates	stay organized to meet	Work is done in teams with	
the intake of orders and	deadlines	other engineers & designers	
schedules the production line	000001053.		

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Collision Repair Technician:	Manual Dexterity: Good	Work Environment: Most	KCTCS Campuses
Specializes in repairing the	hand-eye coordination and the	work is done indoors in auto	
bodies of vehicles damaged in	ability to use tools effectively	body shops or repair facilities.	<u>Automotive Painter -</u>
accidents.	а	These shops are often well-	Certificate < KCTCS
		ventilated to disperse dust and	
Automotive Painter: Focuses	Attention to Detail: Precision	paint fumes.	Collision Repairer - Certificate
on painting and refinishing	is important to ensure high-		< KCTCS
vehicles to restore their	quality finishes and accurate	Physical Demands: The job is	
appearance after repairs.	repairs.	physically demanding,	
		requiring painters to stand for	
Auto Body Shop Manager:	Basic Mechanical Skills:	long periods, bend, stretch,	
Oversees the daily operations	Understanding basic	and lift heavy parts and tools	
of an auto body shop,	automotive systems and		
managing staff, ensuring	components can be beneficial	Exposure to Chemicals:	
quality repairs.	including vehicle body	Painters are frequently	
	structures and repair	exposed to paint fumes,	
Estimator/Appraiser:	techniques.	solvents, and other chemicals.	
Evaluates the extent of			
damage to vehicles and	Creativity and Artistic Sense:	Attention to Detail: Precision	
provides cost estimates for	An eye for color and design	is crucial in this field. Painters	
repairs.	can be valuable for custom	must ensure that surfaces are	
<b>B</b> · · <b>F</b> · · · · · · · · · · ·	paint jobs and achieving the	properly prepared, and that	
Paint lechnician: Works in	desired aesthetic results.	paint is applied evenly and	
manufacturing or custom		accurately	
snops, applying paint to new	Physical Stamina: The job can	To an an all and	
venicles or custom projects.	be physically demanding,	leamwork and	
Detailer: Creatializes in the	requiring students to spend a	Communication:	
final taughas afyzhiala	tot of time on their feet,	Collaboration with other	
initial touches of vehicle	perto and toolo		
neint and bodywork are	parts and tools.	supervisors is common.	
flowloop	Safaty Awaranasa	Variable Hours: Work bours	
nawiess.	Understanding and adhering	can vary with some shops	
Insurance Adjuster: Works for	to safety protocols to prevent	requiring overtime or weekend	
insurance companies to	accidents and injuries	work to meet customer	
assess vehicle damage claims	accidents and injunes.	demands and deadlines	
and determine the appropriate	Basic Math Skills: Knowledge		
compensation for repairs1	of measurements and		
	proportions is important for		
	mixing paint and estimating		
	materials needed for repairs		

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Non-Structural Repair	Manual Dexterity: Good	Work Environment: Most	KCTCS Campuses
Technician: Specializes in	hand-eye coordination and the	work is done indoors in auto	
repairing cosmetic and minor	ability to use tools effectively.	body shops or repair facilities.	Automotive Painter -
damage to vehicle bodies,		These shops are often well-	Certificate < KCTCS
such as dents, scratches, and	Attention to Detail: Precision	ventilated to disperse dust and	
minor panel replacements.	is important to ensure high- quality repairs and accurate	paint fumes.	<u>Collision Repairer - Certificate</u> <u>&lt; KCTCS</u>
Automotive Painter: Focuses	work.	Physical Demands: The job is	
on painting and refinishing		physically demanding,	
vehicles to restore their	Basic Mechanical Skills:	requiring painters to stand for	
appearance after repairs.	Understanding basic	long periods, bend, stretch,	
	automotive systems and	and lift heavy parts and tools	
Auto Body Technician: Works	components including		
on repairing and restoring the	familiarity with vehicle body	Exposure to Chemicals:	
structural integrity and	structures and repair	Painters are frequently	
appearance of vehicles.	techniques.	exposed to paint fumes,	
		solvents, and other chemicals.	
Paint Prepper: Prepares	Problem-Solving: The ability to		
vehicles for painting by	diagnose and troubleshoot	Attention to Detail: Precision	
sanding, masking, and	issues efficiently is essential.	is crucial in this field. Painters	
cleaning surfaces to ensure a		must ensure that surfaces are	
smooth and even finish.	Physical Stamina: The job can	properly prepared, and that	
	be physically demanding,	paint is applied evenly and	
Detailer: Specializes in the	requiring students to spend a	accurately	
final touches of vehicle	lot of time on their feet,		
restoration, ensuring that the	bending, and lifting heavy	Teamwork and	
paint and bodywork are	parts and tools.	Communication:	
flawless.		Collaboration with other	
	Safety Awareness:	technicians, estimators, and	
Insurance Adjuster: Works for	Understanding and adhering	supervisors is common.	
insurance companies to	to safety protocols to prevent		
assess vehicle damage claims	accidents and injuries	Variable Hours: Work hours	
and determine the appropriate		can vary, with some shops	
compensation for repairs.	Basic Math Skills: Knowledge	requiring overtime or weekend	
	of measurements and	work to meet customer	
Custom Car Builder: Focuses	proportions is important for	demands and deadlines.	
on creating custom vehicles,	estimating materials needed		
often working on unique paint	for repairs and ensuring		
Jobs and body modifications to	accurate work.		
meet client specifications.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	Opportunities in Kentucky
Diesel Technician/Mechanic:	Mechanical Aptitude:	Work Environment: Most	KCTCS Campuses
Specializes in diagnosing.	Understanding how diesel	technicians work in well-	•••••
repairing, and maintaining	engines and heavy truck	ventilated and sometimes	Medium and Heavy Truck
diesel engines and related	systems work including	noisy repair shops. These	Technician - Diploma < KCTCS
systems.	knowledge of engines,	shops are equipped with tools	
-	transmissions, brakes, and	and machinery necessary for	
Fleet Maintenance	electrical systems.	repairing and maintaining	
Technician: Works for		diesel trucks.	
companies with large fleets of	Problem-Solving: The ability		
vehicles, ensuring that all	to diagnose and troubleshoot	Physical Demands: The job is	
trucks are regularly inspected,	issues efficiently is essential.	physically demanding,	
maintained, and repaired.		requiring technicians to spend	
	Attention to Detail: Precision	a lot of time on their feet,	
Service Technician:	is important to ensure	bending, reaching, and lifting	
Employed by dealerships or	accurate inspections,	heavy parts and tools.	
repair shops to perform	maintenance, and repairs.		
routine maintenance,		Exposure to Dirt and Fluids:	
inspections, and minor repairs	Manual Dexterity: Good	Technicians frequently work	
on diesel trucks.	hand-eye coordination and the	with greasy parts and tools,	
	ability to use tools effectively.	and exposure to diesel fuel,	
Mobile Diesel Mechanic:		oil, and other fluids is	
Provides on-site repair and	Basic Math and Science	common	
maintenance services for	Knowledge: Understanding		
diesel trucks, traveling to	principles of physics,	Uncomfortable Positions:	
different locations.	chemistry, and mathematics.	Technicians work in awkward	
		positions, such as reaching,	
Heavy Equipment	Physical Stamina: The job can	bending, or kneeling.	
lechnician: Focuses on the	be physically demanding,	<b>T</b>	
maintenance and repair of	requiring students to spend a	leamwork and	
neavy machinery.	tot of time on their feet,	communication: The Job	
Discol Engine Specialist:	perto and toolo	Toobaiciano work togothar to	
Specializes in the repair and	parts and tools.	diagnage complex problems	
maintenance of diesel	Safaty Awaranass:	share expertise, and assist	
engines	Understanding and adhering	with labor intensive tasks	
engines.	to sefety protocols to prevent	with tabor-intensive tasks.	
Truck Inspector: Conducts	accidents and injuries is	Variable Hours: Work bours	
thorough inspections of trucks	crucial in a diesel repair	can vary with some shops	
to ensure they meet safety and	setting	requiring overtime or weekend	
regulatory standards.		work to meet deadlines.	
identifying any issues that			
need to be addressed.			

#### 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.

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	Opportunities in Kentucky
Diesel Technician/Mechanic:	Mechanical Aptitude:	Work Environment: Most	KCTCS Campuses
Specializes in diagnosing,	Understanding how diesel	technicians work in well-	
repairing, and maintaining	engines and heavy truck	ventilated and sometimes	Medium and Heavy Truck
diesel engines and related	systems work including	noisy repair shops. These	<u> Technician - Diploma &lt; KCTCS</u>
systems.	knowledge of engines,	shops are equipped with tools	
	transmissions, brakes, and	and machinery necessary for	
Fleet Maintenance	electrical systems.	repairing and maintaining	
Technician: Works for		diesel trucks.	
companies with large fleets of	Problem-Solving: The ability		
vehicles, ensuring that all	to diagnose and troubleshoot	Physical Demands: The job is	
trucks are regularly inspected,	issues efficiently is essential.	physically demanding,	
maintained, and repaired.		requiring technicians to spend	
	Attention to Detail: Precision	a lot of time on their feet,	
Service Technician:	is important to ensure	bending, reaching, and lifting	
Employed by dealerships or	accurate inspections,	heavy parts and tools.	
repair shops to perform	maintenance, and repairs.	Free and the Distance of Floriday	
routine maintenance,	Manual Data sites Octabl	Exposure to Dirt and Fluids:	
inspections, and minor repairs	Manual Dexterity: Good	lechnicians frequently work	
on dieset trucks.	nand-eye coordination and the	with greasy parts and tools,	
Mahila Diasal Maghania	ability to use tools enectively.	and exposure to dieset ruet,	
Provides on site repair and	Basic Math and Science		
maintenance services for	Knowledge: Understanding	common	
diesel trucks traveling to	nrinciples of physics	Uncomfortable Positions:	
different locations	chemistry and mathematics	Technicians work in awkward	
different locations.	chemistry, and mathematics.	nositions such as reaching	
Heavy Equipment	Physical Stamina: The job can	hending or kneeling	
Technician: Focuses on the	be physically demanding	Sonding, or knooking.	
maintenance and repair of	requiring students to spend a	Teamwork and	
heavy machinery.	lot of time on their feet.	Communication: The job	
lieuty maennery.	bending, and lifting heavy	involves a lot of collaboration.	
Diesel Engine Specialist:	parts and tools.	Technicians work together to	
Specializes in the repair and		diagnose complex problems.	
maintenance of diesel	Safety Awareness:	share expertise, and assist	
engines.	Understanding and adhering	with labor-intensive tasks.	
-	to safety protocols to prevent		
Truck Inspector: Conducts	accidents and injuries is	Variable Hours: Work hours	
thorough inspections of trucks	crucial in a diesel repair	can vary, with some shops	
to ensure they meet safety and	setting.	requiring overtime or weekend	
regulatory standards,		work to meet deadlines.	
identifying any issues that			
need to be addressed.			

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
		Environments	<b>Opportunities in Kentucky</b>
Aircraft Maintenance	Mechanical Aptitude: A	Hangars and Repair Stations:	KCTCS Campuses
Technician: Perform routine	natural ability to understand	Most AMTs work in indoor	
maintenance, inspections,	and work with mechanical	hangars or repair stations.	Aviation Maintenance
and repairs on aircraft to	systems and tools.		<u>Technology - AAS &lt; KCTCS</u>
ensure they meet safety and		Outdoor Work: Some tasks	
performance standards.	Attention to Detail & Problem	may require working outdoors	
	Solving: Students should be	on the tarmac, especially for	
Avionics Technician:	meticulous and able to follow	line maintenance technicians.	
Specialize in maintaining and	detailed instructions		
repairing the electronic	accurately and be able to	Noise Levels: The work	
systems used in aircraft.	diagnose and solve	environment can be noisy due	
	mechanical issues.	to aircraft engines, machinery,	
Engine Mechanic: Focus on		and tools.	
the maintenance and repair of	Mathematical Skills: A good		
aircraft engines.	grasp of basic mathematics,	Physical Stamina:	
	including algebra and	Technicians need to have good	
Component Maintenance	geometry, is important for	physical stamina to handle	
Technician: Work on specific	understanding technical	long hours and physically	
aircraft components, such as	manuals.	demanding tasks.	
landing gear, hydraulic			
systems, and flight control	Science Knowledge: A solid	Work Hours: AMTs may work	
systems.	understanding of physics and	in shifts, including nights,	
	basic principles of	weekends, and holidays.	
Line Maintenance	aerodynamics can be very	Overtime is common,	
Technician: Perform quick,	beneficial.	especially during peak travel	
routine maintenance and		seasons	
inspections on aircraft	Technical Reading and		
between flights.	Comprehension: The ability	Safety Protocols: Strict	
	to read and comprehend	adherence to safety protocols	
Base Maintenance	technical manuals, blueprints,	and regulations is essential.	
Technician: Conduct more	and schematics.	Technicians often wear	
extensive maintenance and		protective gear, such as	
repairs during scheduled	Manual Dexterity: Good	gloves, safety glasses, and ear	
downtime.	hand-eye coordination and the	protection	
	ability to use tools and		
Safety and Environmental	equipment with precision.	Complex Systems: Working	
Specialist: Focus on		with advanced and complex	
maintaining safety standards	Physical Stamina: Aircraft	aircraft systems requires	
and environmental	maintenance can be	continuous learning and	
compliance within the	physically demanding,	staying updated.	
maintenance operations.	requiring strength, endurance,		
	and the ability to work in		
	various positions		

#### 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

Career Choices	Aptitudes Needed	Common Work	Postsecondary
	•	Environments	Opportunities in Kentucky
Pilot: Work as a commercial	Strong Mathematical Skills:	Working conditions in the field	KCTCS Campuses
or private pilot, flying	A solid understanding of	of Flight and Aeronautics can	
passengers or cargo. This role	mathematics, including	vary depending on the specific	Flight Training - Fixed Wing
requires additional flight	algebra, geometry, and	role. Below are some general	KCTCS
training and certification.	trigonometry.	conditions found in the more	
		common roles within this field.	University Programs
Aerospace Engineer: Design,	Science Knowledge: A good	In-depth research will be	
develop, and test aircraft,	grasp of physics, particularly	required for more detailed	School of Aviation - Eastern
spacecraft, and related	mechanics and flight	information.	Kentucky University
systems.	principles, is crucial.		
	Knowledge of chemistry can	Pilots and Flight Crews	Bachelor of Science in
Air Traffic Controller: Manage	also be beneficial.	Confined Workspaces	Aviation - Eastern Kentucky
the safe and efficient		Irregular Schedules	University
movement of aircraft.	Technical Aptitude: An ability	Long Hours	
	to understand and work with	Fatigue	Space Systems Engineering,
Aircraft and Avionics	technical systems and tools.	High Responsibility	B.S.   Morehead State
Mechanic: Maintain and		Extensive Travel (lots of time	University   Kentucky
repair aircraft and their	Problem-Solving: The ability to	away from home)	
electronic systems.	analyze situations,	Potential for Emergency/Life-	
	troubleshoot issues, and find	Threatening Situations	
Flight Instructor: Teach	effective solutions.		
aspiring pilots how to fly and		Air Traffic Controllers	
prepare them for certification.	Attention to Detail: Precision	Control Towers	
	and accuracy are critical in	Irregular Shifts	
Aviation Safety Inspector:	aviation to ensure safety and	High Stress	
Ensure compliance with	efficiency.	Constant Mental Focus	
aviation safety regulations and		Strict Safety Protocols	
standards.	Spatial Awareness: A good		
	sense of spatial orientation	Aerospace Engineers	
Airport Operations Manager:	and the ability to visualize	Offices and Labs	
Oversee the daily operations	objects in three dimensions.	Highly Collaborative Work	
of an airport, including		Regular Working Hours	
managing staff, coordinating	Manual Dexterity: Good	Desk Work	
flights, and ensuring safety.	nand-eye coordination and the	Strict Compliance with	
A	ability to operate controls and	Regulatory Standards In	
Aerospace lechnician: Assist	instruments.	Design	
engineers in developing and	Dhusiaal Fitnesse Maintaining		
	rnysical ritness: Maintaining		
spaceciait technologies.	stomino		
	starrind.		

# **Program Area Consultants**

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# Additional Resources

**Career Videos** 

Work-Based Learning - Kentucky Department of Education

TRACK: Tech Ready Apprentices for Careers in Kentucky - Kentucky Department of Education

**Registered Apprenticeships - Kentucky Works** 

**Futuriti-Career Exploration in Kentucky** 

High-Demand Jobs in Kentucky by Region

**Statewide Articulation Agreements - Kentucky Department of Education** 

**Dual Credit - Kentucky Department of Education** 

KHEAA

Kentucky Council on Postsecondary Education

**Kentucky Commission on Proprietary Education** 

For questions regarding this document, please contact John Paise in the Office of Career and Technical Education at john.paise@education.ky.gov