

CARROLL COUNTY CAREER & TECHNOLOGY CENTER PROGRAMS

Learn more at: <https://ctc.carrollk12.org/>

CONSTRUCTION



CARPENTRY:

Students will acquire essential construction skills in our Carpentry program, including blueprint reading, hand and power tool use, framing, roof truss manufacturing, laser leveling, and interior/exterior finishing. Gain the hands-on experience needed to start a successful career in carpentry after successfully completing this program.



HVAC:

The HVAC program covers air conditioning, refrigeration, plumbing, heating, and sheet metal work. Learn to size, layout, install, and maintain oil, gas, electric, and heat pump forced-air heating systems. Be prepared to start a successful career in residential HVAC after successfully completing this program.



MASONRY:

The Masonry program teaches students to build practical projects including walls, columns, walkways, fireplaces, mailboxes, and BBQs using brick, block, and stone. Students also explore stonework and tile installation, gaining hands-on experience for a successful career in masonry.



ELECTRICAL CONSTRUCTION:

The Electrical Construction program provides comprehensive instruction in the wiring, layout, assembly, installation, and testing of electrical systems. Students will learn to adhere to local and national electrical codes while gaining hands-on experience essential for a successful career in the electrical industry.

MANUFACTURING, ENGINEERING & TECHNOLOGY



WELDING TECHNOLOGY:

The Welding program teaches students various welding processes and metal fabrication skills. Learn Gas Metal Arc Welding (GMAW), Arc Welding (SMAW), Tungsten Inert Gas Welding (TIG), Oxyfuel Cutting, Plasma Cutting, and Computer Automated Plasma Cutting. Gain hands-on experience to launch a successful career in welding.



APPLIED MECHANICAL ENGINEERING:

This program provides valuable experience for students pursuing a BS in mechanical engineering or starting a career as a machinist or engineering technician. Students create precision parts using industrial tools and advanced CNC equipment. This program is nationally certified by the National Institute of Metalworking Skills (NIMS).



ENGINEERING (PLTW®):

This program equips students with essential skills in digital electronics, robotics, and computer-integrated manufacturing. Students explore computing foundations through circuit design, creating combinational and sequential logic as electrical engineers do in the industry. They collaborate in teams to design and develop original solutions to real-world problems, using software like Inventor and EdgeCAM to take inventions from proposal to final product. This hands-on approach emphasizes manufacturing processes, product design, robotics, and automation.



DRAFTING:

The Drafting program allows students to translate ideas into visual representations, which is essential in the engineering process. Students engage in both hand drafting and computer-based techniques, with a focus on architectural drafting, civil engineering, mechanical engineering, and Computer-Aided Design (CAD). They also create 3D representations, including rapid prototypes. Participants prepare for the AutoCAD certification exam, gaining valuable skills for careers in design and engineering.

HEALTH, BIOSCIENCES, AND HUMAN SERVICES



ACADEMY OF HEALTH PROFESSIONS:

These programs prepare students for a career in the healthcare industry, including opportunities for real-life clinical experiences in the community. If you plan to attend college after high school take Pre-Nursing (Honors) or Physical Rehabilitation. If you plan to work immediately after high school, we offer Nursing Assistant (Academic Level).



AUTO SERVICE TECHNOLOGY:

Students train to become skilled technicians using advanced diagnostic tools like the LED Alignment System. Students gain hands-on experience in a 22-bay modern service area and earn ASE certifications in brakes, steering & suspension, engine performance, electrical systems, and maintenance/light repair.



BIOMEDICAL SCIENCES (PLTW®):

The Biomedical Sciences program is designed for students with career interests in biomedical research and biotechnology. Students study human medicine, research processes, and are introduced to bioinformatics. They investigate human body systems and various health conditions.



HEAVY EQUIPMENT AND TRUCK TECHNOLOGY:

Prepares students in all phases of diesel engine repair, covering engines used in buses, ships, trucks, electric generators, farm equipment, and construction machinery. Students learn troubleshooting, disassembly, reconditioning, and system repairs for commercial vehicles and heavy machinery, gaining hands-on experience with diagnostic tools and manuals. Possible ASE certifications include Diesel Engines, Brakes, Diesel Engines, and Electronics.



CRIMINAL JUSTICE (HOMELAND SECURITY):

The Criminal Justice program introduces students to multiple aspects of criminal justice, law enforcement, and public safety. It provides the general knowledge needed for various law enforcement careers at the federal, state, and local levels and can also prepare students with an interest in criminal law.



COLLISION REPAIR TECHNOLOGY:

This program combines auto repair and art, teaching students to restore damaged vehicles to pre-accident condition. Students gain expertise in structural damage, paint refinishing, and body repair, earning ASE certifications in Structural Analysis and Damage Repair, Non-Structural Damage Repair, and Painting/Refinishing.

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BUSINESS MANAGEMENT & FINANCE



FINANCIAL SERVICES (ACAD OF FINANCE: AOF)

This advanced program prepares students for finance careers through college-level courses in accounting, financial management, and global economics. Students analyze investments, capital budgeting, and financial statements, and fulfill National Academy of Finance requirements through either an internship or dual enrollment in Principles of Financial Management



ENTREPRENEURSHIP/SMALL BUSINESS:

Designed for students who would like to start their own small business. This program focuses on initiating and managing businesses, including startups, small businesses, gig economy work, and social enterprises.



NETWORKING/CYBERSECURITY (CISCO®):

Learn network setup, management, and troubleshooting, earning Network+ certification. Cybersecurity skills focus on protecting systems and data to secure the integrity, confidentiality, and availability of IT systems, preparing students for high-demand roles in the industry.



NATURAL RESOURCES MANAGEMENT:

Students will explore topics in environmental science, natural resource management, renewable energy, forestry, conservation, and water quality. Students will also gain a basic understanding of how GIS or drones could be used to support natural resource management.

TEACHER AND EARLY EDUCATION



TEACHER ACADEMY OF MARYLAND (TAM):

This program addresses the persistent teacher shortage by creating a pipeline of teacher candidates. The four TAM courses provide students with hands-on experiences and early exposure to the teaching profession, culminating in an internship while still in high school.



CHILD DEV AND EARLY EDUCATION (CDEE):

Students prepare for CDA Preschool certification through hands-on experience in licensed programs, building a professional portfolio, and studying child development. The program emphasizes early learning environments, health and safety, family engagement, and applying educational theory to real-world teaching.

CONSUMER SERVICES & HOSPITALITY



COSMETOLOGY:

Cosmetology uses both theory and practical experience to prepare students for the Maryland State Board of Cosmetology's practical and written examinations required to become a licensed cosmetologist. Areas covered include anatomy, hair coloring and cutting, manicures, pedicures, chemical texture services, and facials.



TEXTILES & FASHION CAREERS:

This program instructs students in material selection, design, cutting, sewing, fitting, alterations, and interior design. An in-depth study of fashion design and merchandising is also included. Students personally construct garments in preparation for the student-produced fashion show.



CULINARY ARTS (2 Options)

This program prepares students for careers in the foodservice industry through hands-on training in a professional kitchen and student-run restaurant. In Level I, all students learn culinary fundamentals, safety, and sanitation while running our Café and Grill. They can earn the ServSafe® certification. Students sit for the American Culinary Federation (ACF) certification exams in their specialty. Students study either:

- **Professional Cooking** – Emphasizes knife skills, cooking techniques, menu planning, recipe costing, and plating.
- **Professional Baking & Pastry** – Focuses on baking science, breads, cakes, pastries, and commercial dessert production.



DIGITAL ART & GRAPHIC DESIGN:

(Print Production)

This program is a nationally certified Print ED course that prepares students for a career in graphic design, page layout, illustration, photography, and production. MAC based labs allow students to learn how to edit and create original graphic art.



VIDEO PRODUCTION:

Instruction in a real studio environment. Students create scripts and then record, capture, and edit film and television broadcasts. Students use HD Cameras and Hollywood level Final Cut Pro and Adobe Premier Pro editing software. Students also have access to a professional TV studio.



ANIMATION AND GAME DESIGN:

(Interactive Media Production)

Students experience multimedia design and production through project planning and product development. Students learn how to use tools and modalities in the production process. Students design, code, build, test and troubleshoot basic custom programs for multimedia applications and create web applications with advanced interactive components.