

CAREER & TECHNICAL CONCENTRATION GUIDES

Use these guides as planning models, not as fixed course-title requirements. A concentration should normally include three progressively advanced credits in one defined career field, followed by a related practicum/work-based learning credit and a supporting career elective. Where a student is enrolled in an outside technical school, apprenticeship, community college, licensed training program, or industry curriculum, use the provider's actual course titles and document the competencies, hours, and credentials earned. Maryland's current CTE framework organizes

Concentration	CTE I / Foundations	CTE II / Intermediate	CTE III / Advanced	Practicum / WBL Ideas	Career Elective Ideas	Credential / Training Notes
Carpentry & Residential Construction	Construction Technology & Safety	Carpentry & Residential Construction	Advanced Carpentry & Building Systems	Carpenter/builder internship; remodeling crew; construction apprenticeship; mentored build project	Blueprint Reading; CAD & Residential Design; Construction Math; Entrepreneurship	Consider OSHA/safety and trade credentials appropriate to provider/employer; apprenticeship rules may apply
Electrical	Electrical Technology I	Residential Electrical Systems	Advanced Electrical / Commercial Systems	Electrical contractor internship or youth apprenticeship; supervised shop/site experience	Blueprint Reading; Applied Algebra/Technical Math; Electronics; Entrepreneurship	Credential/licensure pathways depend on age, training provider, and Maryland trade requirements
HVACR	HVACR Fundamentals	Electrical & Mechanical Systems for HVACR	Heating, Cooling & Refrigeration Systems	HVAC contractor internship/apprenticeship; supervised maintenance/service experience	Applied Physics; Technical Math; Blueprint Reading; Small Business Management	EPA/industry credentials may be relevant when age/training requirements are met
Plumbing	Plumbing Technology I	Residential Plumbing Systems	Advanced Plumbing / Mechanical Systems	Plumbing contractor internship/apprenticeship; supervised installation/service	Blueprint Reading; Construction Math; Business & Entrepreneurship	Use recognized apprenticeship/provider competencies where available
Welding & Fabrication	Introduction to Welding & Metalworking	Welding Processes & Fabrication	Advanced Welding Technology	Welding shop internship/apprenticeship; fabrication projects under industry mentor	Blueprint Reading; CAD; Technical Math; Metallurgy/Materials Science	Industry welding credentials may be appropriate through qualified training/testing providers
Automotive Technology	Automotive Technology I: Systems & Maintenance	Automotive Technology II: Diagnostics & Repair	Advanced Automotive Systems	Automotive shop internship; dealership/service-center experience; mentored diagnostics	Small Engine Repair; Automotive Electronics; Business Accounting; Technical Math	ASE-aligned training/credentials may be useful where accessible
Autobody / Collision Repair	Collision Repair Foundations	Structural & Nonstructural Repair	Refinishing & Advanced Collision Repair	Body shop internship; restoration/collision repair placement	Welding; Automotive Technology; Estimating; Small Business Management	Use provider/industry safety and collision-repair standards
Diesel / Medium-Heavy Truck	Diesel Systems & Maintenance	Medium-Heavy Truck Systems	Advanced Diesel Diagnostics	Fleet shop, heavy-equipment dealer, trucking maintenance internship	Hydraulics; Welding; Technical Math; Automotive Electricity	Industry credentials may be available through aligned technical programs
Marine Maintenance & Repair	Marine Systems Fundamentals	Marine Engines & Electrical Systems	Advanced Marine Maintenance & Diagnostics	Marina, boatyard, marine service internship	Small Engine Repair; Electrical Systems; Fiberglass/Composites; Entrepreneurship	Provider/industry credentials vary
Culinary Arts	Culinary Foundations & Food Safety	Culinary Arts I: Techniques & Production	Advanced Culinary & Hospitality Operations	Restaurant, catering, institutional kitchen, bakery, or hospitality internship	Baking & Pastry; Nutrition/Food Science; Hospitality; Entrepreneurship	Food-safety and culinary credentials may be appropriate through recognized providers
Baking & Pastry Arts	Baking Foundations	Breads, Pastries & Production	Advanced Baking, Decorating & Production	Bakery/pastry kitchen internship; catering production	Culinary Arts; Food Science; Entrepreneurship; Hospitality Management	Food-safety/industry credentials may apply

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Cosmetology	Cosmetology Foundations	Cosmetology Theory & Skills	Advanced Cosmetology / Salon Practice	Licensed training-school clinical hours; salon-related supervised experience as legally permitted	Salon Business; Marketing; Entrepreneurship; Chemistry of Hair & Skin	Licensure requires compliance with Maryland Board/provider hour and training requirements; use external approved/licensed program records where applicable
Barbering	Barbering Foundations	Barbering Theory & Skills	Advanced Barbering / Shop Practice	Licensed training-school clinical hours; barber-shop experience as legally permitted	Entrepreneurship; Marketing; Personal Finance; Anatomy/Sanitation	Licensure requires applicable Maryland training/hour requirements
Certified Nursing Assistant / Patient Care	Introduction to Health Professions	Nursing Assistant Theory & Clinical Skills	Advanced Patient Care / CNA Clinical	Clinical placement through qualified CNA training provider; healthcare internship	Medical Terminology; Anatomy & Physiology; Psychology; Nutrition	CNA credential/clinical requirements must be completed through an appropriately qualified program/provider
Clinical Medical Assisting	Health Professions Foundations	Clinical Medical Assisting I	Clinical Medical Assisting II / Practicum Prep	Medical office/clinic externship through qualified provider	Medical Terminology; Anatomy & Physiology; Medical Office Technology	Credential eligibility depends on aligned training provider and certifying body
Dental Assisting	Health Professions Foundations	Dental Assisting I	Advanced Dental Assisting	Dental office clinical/externship through qualified provider	Anatomy & Physiology; Medical Terminology; Business Technology	Credential/radiography requirements should follow applicable Maryland/provider rules
Pharmacy Technician	Health Professions Foundations	Pharmacy Technology I	Advanced Pharmacy Technology	Pharmacy externship or supervised experience through qualified provider	Medical Terminology; Chemistry; Applied Math; Business Technology	Credential and age requirements vary; use qualified training/provider standards
Physical Rehabilitation	Health Professions Foundations	Rehabilitation Science & Patient Care	Advanced Physical Rehabilitation	PT/OT/rehab clinic observation, internship, or mentored experience as permitted	Anatomy & Physiology; Kinesiology; Psychology; Nutrition	This pathway prepares for further training; professional licensure occurs postsecondary
Emergency Medical Services	Introduction to Emergency Services	Emergency Medical Science	EMT Preparation / Advanced Emergency Care	EMT clinical/field experience through qualified program; emergency-services internship	Anatomy & Physiology; Medical Terminology; Public Safety Communications	EMT certification requires completion of applicable approved training/testing requirements
Fire & Emergency Response	Fire & Emergency Services Foundations	Firefighter Operations I	Advanced Firefighter / Emergency Response	Fire department cadet/youth program; approved firefighter training; emergency-response placement	EMT Preparation; Fire Science; Public Safety Communications	Firefighter credentials/training must follow applicable department/state requirements
Criminal Justice / Law Enforcement	Introduction to Criminal Justice	Criminal Law, Procedure & Investigations	Advanced Criminal Justice / Public Safety	Law-enforcement/public-safety internship, court observation, emergency communications, mentored capstone	Forensic Science; Psychology; Constitutional Law; Public Speaking	High-school study is career preparation, not professional law-enforcement certification
Cybersecurity	Computer Systems & Cyber Foundations	Cybersecurity I: Networks & Defense	Advanced Cybersecurity	IT/cyber internship; help desk/security operations exposure; mentored security project	Networking; Python; Linux; Digital Forensics	Industry IT/cyber credentials may be appropriate depending on course/provider