

2019–20 Programs of Study

Tennessee’s career and technical education (CTE) programs of study are meant to provide a relevant framework of industry-aligned, rigorous courses that progress a student in knowledge and skills year after year. They provide invaluable opportunities for students to experience a subject that they are passionate about and explore interests that lead to postsecondary learning and future career paths. These sequenced courses also reflect and support the three-credit elective focus requirement for graduation. Level 1 courses are encouraged to be taken by students in ninth grade; however, districts may make scheduling decisions that work best for their communities and students.

Work-based learning (WBL) is seen as a valuable opportunity for all students. The **Work-Based Learning: Career Practicum (C20H17)** course may substitute for the Level 4 offering in all programs of study. Additionally, the **Work-Based Learning: Career Practicum (C20H17)** course can make a student a concentrator when taken as the third course in a program of study if the student’s placement in is an **aligned occupation**. For more information, please refer to the department’s Work-Based Learning Policy Guide at: https://www.tn.gov/content/dam/tn/education/ccte/wbl/wbl_policy_guide.pdf. **Early postsecondary opportunities** (EPSOs), such as dual enrollment, dual credit courses, and college level examination program exams (CLEP) are also valuable opportunities for all students and should be provided within the program of study.

The **dual enrollment course codes** may substitute for the Level 3 or 4 course offerings in any aligned career cluster’s programs of study where those course codes represent postsecondary courses. Aligned **industry certifications** have been placed under the corresponding CTE course within the program of study to demonstrate where students have the opportunity to sit for industry and postsecondary recognized credential.

Career Exploration (C25H08) is available to orient eighth and ninth grade students to high school, postsecondary, and career options and develop employability skills. This course can serve as a prerequisite for any CTE course and program of study; however, it is not a required part of any program of study and should not be counted toward CTE concentrator status.

For additional information about courses or programs of study, please reach out to Deborah Knoll, director of student success at Deborah.Knoll@tn.gov or visit our webpage at: <https://www.tn.gov/education/career-and-technical-education.html>.

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Advanced Manufacturing

Program of Study	Level 1	Level 2	Level 3	Level 4
Machining Technology	Principles of Manufacturing (C13H05)	Principles of Machining I (C13H09)	Principles of Machining II (C13H06) -or- Dual Enrollment Machining Technology (C13H01)	Manufacturing Practicum (C13H08) -or- Dual Enrollment Machining Technology (C13H01)
	Industry Certification: Machining Level I - Measurement, Materials, and Safety Certification (NIMS) -and/or- OSHA 10 -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: Production Certification (CPT) Safety Module	Industry Certification: Production Certification (CPT) Quality Practices and Measurement Module -and/or- OSHA 30 General Industry	Industry Certification: Production Certification (CPT) Manufacturing Processes and Production Module and Maintenance Awareness Module -and/or- OSHA 30 General Industry
Electromechanical Technology	Principles of Manufacturing (C13H05)	Introduction to Electromechanical (C13H14)	Advanced Electromechanical Technology (C13H13) -or- Dual Enrollment Electromechanical Technology (C13H02)	Manufacturing Practicum (C13H08) -or- Dual Enrollment Electromechanical Technology (C13H02)
	Industry Certification: Machining Level I - Measurement, Materials, and Safety Certification (NIMS) -and/or- OSHA 10 -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: Production Certification (CPT) Safety Module	Industry Certification: OSHA 30 General Industry	Industry Certification: OSHA 30 General Industry
Mechatronics	Principles of Manufacturing (C13H05)	Digital Electronics (C13H07) -or- Robotics & Automated Systems (C13H15) -or-	Mechatronics I ¹ (C13H16) -or- Dual Enrollment Mechatronics (C13H04)	Mechatronics II ¹ (C13H17) -or- Manufacturing Practicum (C13H08) -or-

		Project Lead the Way (PLTW) Computer Integrated Manufacturing (C13H11)		Dual Enrollment Mechatronics (C13H04)
	Industry Certification: Machining Level I - Measurement, Materials, and Safety Certification (NIMS) -and/or- OSHA 10 -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: FANUC only with Robotics & Automated Systems (C13H15)	Industry Certification: OSHA 30 General Industry	Industry Certification: Level 1 Siemens Certified Mechatronic Systems Assistant -and/or- OSHA 30 General Industry
Welding	Principles of Manufacturing (C13H05)	Welding I (C13H12)	Welding II ² (C13H10) -or- Dual Enrollment Welding (C13H03)	Manufacturing Practicum (C13H08) -or- Dual Enrollment Welding (C13H03)
	Industry Certification: Machining Level I - Measurement, Materials, and Safety Certification (NIMS) -and/or- OSHA 10 -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: AWS SENSE Entry Level Welder -and/or- NCCER Core Curriculum	Industry Certification: AWS SENSE Advanced Level Welder or American Welding Society Certified Welder -and/or- OSHA 30 General Industry	Industry Certification: OSHA 30 General Industry

¹ Local dual credit and/or dual enrollment opportunities exist for this course.

² May be taught for 1 or 2 credits.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) course may substitute for the Level 4 offering in all programs of study

Agriculture, Food, & Natural Resources

Program of Study	Level 1	Level 2	Level 3	Level 4
Agribusiness	Agriscience ¹ (C18H19)	Principles of Agribusiness (C18H14)	Organizational Leadership and Communications (C18H18) -or- Dual Enrollment Agribusiness (C18H03)	Agricultural Business and Finance ² (C18H11) -or- Statewide Dual Credit Intro to Agribusiness (C18H10) -or- Dual Enrollment Agribusiness (C18H03)
	Industry Certification: OSHA - 10		Industry Certification: OSHA 30 General Industry	Industry Certification: OSHA 30 General Industry
	Supervised Agricultural Experience (C18H23)			
Horticulture Science	Agriscience ¹ (C18H19)	Principles of Plant Science and Hydroculture (C18H30)	Greenhouse Management (C18H17) -or- Statewide Dual Credit Course Introduction to Plant Science (C18H09) -or- Dual Enrollment Horticulture Science (C18H05)	Landscaping and Turf Science (C18H16) -or- Dual Enrollment Horticulture Science (C18H05)
	Industry Certification: OSHA - 10		Industry Certification: OSHA 30 General Industry	Industry Certifications: Tennessee Specific Industry Certification for Horticulture Science Commercial Applicators Certification (03)
	Supervised Agricultural Experience (C18H23)			
Veterinary and Animal Science	Agriscience ¹ (C18H19)	Small Animal Science (C18H20)	Large Animal Science (C18H27) -or-	Veterinary Science ¹ (C18H21) -or-

			Dual Enrollment Veterinary & Animal Science (C18H01)	Dual Enrollment Veterinary & Animal Science (C18H01)
	Industry Certification: OSHA - 10		Industry Certification: OSHA 30 General Industry	Industry Certifications: TN Specific Industry Certification Animal Science OSHA 30 General Industry
Supervised Agricultural Experience (C18H23)				
Agricultural Engineering and Applied Technologies	Agriscience ¹ (C18H19)	Principles of Agricultural Mechanics (C18H12)	Agricultural Power and Equipment (C18H13) -or- Dual Enrollment Agricultural Engineering & Applied Technologies (C18H02)	Agricultural and Biosystems Engineering (C18H22) -or- Dual Enrollment Agricultural Engineering & Applied Technologies (C18H02)
	Industry Certification: OSHA - 10	Industry Certification: Precision Measurement Instruments Certification	Industry Certification: OSHA 30 General Industry -or- Briggs and Stratton Basic Small Engine Certification	Industry Certification: OSHA 30 General Industry -or- Briggs and Stratton Master Service Technician
Supervised Agricultural Experience (C18H23)				
Environmental and Natural Resource Management	Agriscience ¹ (C18H19)	Applied Environmental Science ¹ (C18H25) -or- Cambridge IGCSE Environmental Management (C18H07)	Plant and Soil Science (C18H15) -or- Dual Enrollment Environmental & Natural Resources Management (C18H06)	Natural Resources Management (C18H28) -and/or- AP Environmental Science (G03H25) -or- Dual Enrollment Environmental & Natural Resources Management (C18H06) -or- Cambridge Course Environmental Management (AS Level Only) (C18H08)

	Industry Certification: OSHA - 10		Industry Certification: OSHA 30 General Industry	Industry Certification: OSHA 30 General Industry
	Supervised Agricultural Experience (C18H23)			
Food Science	Agriscience ¹ (C18H19)	Principles of Food Production (C18H29)	Food Science and Safety (C18H26) -or- Dual Enrollment Food Science (C18H04)	Advanced Food Science (C18H24) -or- Dual Enrollment Food Science (C18H04)
	Industry Certification: OSHA - 10		Industry Certification: OSHA 30 General Industry	Industry Certification: OSHA 30 General Industry
	Supervised Agricultural Experience (C18H23)			

¹ Satisfies one lab science credit required for graduation. ² Satisfies ½ credit of Personal Finance required for graduation.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) course may substitute for the Level 4 offering in all programs of study.
- **Introduction to Geographic Information Systems** (C03H14) is a supplemental course which can be offered in addition to courses within the Agricultural Engineering and Applied Technologies program of study but does not count toward concentrator status.

Architecture & Construction

Program of Study	Level 1	Level 2	Level 3	Level 4
Architectural & Engineering Design	Architectural & Engineering Design I (C17H13)	Architectural & Engineering Design II (C17H14)	Architectural & Engineering Design III ¹ (C17H10) -or- Dual Enrollment Architectural & Engineering Design (C17H04)	Engineering Practicum (C17H21) -and/or- AP Calculus (G02H24 or G02H25) -and/or- AP Physics (G03H27, G03H28, G03H24, or G03H29) -or- Dual Enrollment Architectural & Engineering Design (C17H04)
			Industry Certification: Certified Solidworks Associate -and/or- AutoCAD User	
Interior Design	Foundations of Interior Design (C17H12)	Residential Interior Design (C17H11)	Commercial Interior Design (C17H20) -or- Dual Enrollment Interior Design (C17H05)	Advanced Interior Design (C17H19) -or- Dual Enrollment Interior Design (C17H05)
Residential & Commercial Construction	Fundamentals of Construction (C17H15)	Residential & Commercial Construction I (C17H24)	Residential & Commercial Construction II ¹ (C17H25) -or- Dual Enrollment Residential & Commercial Construction (C17H01)	Construction Practicum (C17H22) -or- Dual Enrollment Residential & Commercial Construction (C17H01)
	Industry Certification: NCCER Core Curriculum -and/or- OSHA 10	Industry Certification: NCCER Construction Technology	Industry Certification: OSHA 30 Construction	
Structural Systems	Fundamentals of Construction (C17H15)	Structural Systems I (C17H26)	Structural Systems II ¹ (C17H27) -or- Dual Enrollment Structural Systems (C17H02)	Construction Practicum (C17H22) -or- Dual Enrollment Structural Systems (C17H02)

	Industry Certification: NCCER Core Curriculum -and/or- OSHA 10	Industry Certification: NCCER Carpentry Level One -and/or- Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: NCCER Carpentry Level Two -and/or- OSHA 30 Construction	
Mechanical, Electrical, & Plumbing (MEP) Systems	Fundamentals of Construction (C17H15)	MEP Systems (C17H23)	HVAC (C17H17) -and/or- Electrical Systems (C17H16) -and/or- Plumbing Systems (C17H18) -or- Dual Enrollment Mechanical, Electrical, & Plumbing Systems (C17H03)	Construction Practicum (C17H22) -or- Dual Enrollment Mechanical, Electrical, & Plumbing Systems (C17H03)
	Industry Certification: NCCER Core Curriculum -and/or- OSHA 10	Industry Certification: Precision Measurement Instruments Certification (includes all subtests)	Industry Certifications for C17H17: HVAC Excellence, Heating, Electrical, Air Conditioning Technology (H.E.A.T.) -and/or- HVAC Excellence Employment Ready Certifications -and/or- Universal R-410A EPA Section 608 Universal Industry Certification for C17H16: NCCER Electrical Level One -and/or- OSHA 30 Construction Industry Certification for C17H18: NCCER Plumbing Level One	

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Introduction to Geographic Information Systems** (C03H14) is a supplemental course which can be offered in addition to courses within the Architectural and Engineering Design program of study but does not count toward concentrator status.
- **Welding I** (C13H12) is a supplemental course which can be offered in addition to courses within the MEP, Residential & Commercial Construction, and Structural Systems programs of study but does not count toward concentrator status.

Arts, Audio/Visual Technology, & Communications

Program of Study	Level 1	Level 2	Level 3	Level 4
Digital Arts & Design	Digital Arts & Design I (C05H07)	Digital Arts & Design II (C05H08)	Digital Arts & Design III (C05H09) -or- Dual Enrollment Arts & Design (C05H01)	Applied Arts Practicum (C05H11) -and/or- AP Studio Art: 2-D Design (G05H30) -or- Dual Enrollment Arts & Design (C05H01)
			Industry Certification: Adobe Certified Associate	
Audio/Visual Production	A/V Production I (C11H01)	A/V Production II (C11H02)	A/V Production III (C11H03) -or- Dual Enrollment Audio/Visual Production (C11H00)	Applied Arts Practicum (C05H11) -and/or- AP English Language and Composition (G01H17) -or- Dual Enrollment Audio/Visual Production (C11H00)
Fashion Design	Visual Art I (G05H08)	Foundations of Fashion Design (C05H10)	Fashion Design (C05H05) -or- Dual Enrollment Fashion Design (C05H02) -or- Cambridge International AS Level <u>Art & Design</u> (C05H04)	Advanced Fashion Design (C05H06) -or- Dual Enrollment Fashion Design (C05H02)

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Journalism** (G01H15) is a supplemental course which can be offered in addition to courses within the Audio/Visual Production program of study but does not count toward concentrator status.

Business Management & Administration

Program of Study	Level 1	Level 2	Level 3	Level 4
Business Management	Introduction to Business & Marketing (C12H26)	Business Communications (C12H16) -or- Accounting I (C12H27) -or- Cambridge IGCSE Accounting (C12H10)	Business Management (C12H17) -or- Statewide Dual Credit Introduction to Business (C12H44) -or- Dual Enrollment Business Management (C12H01) -and/or- Principles of Management CLEP -or- Cambridge AS Business (C12H14)	Business & Entrepreneurship Practicum (C12H35) -and/or- Virtual Enterprise International ¹ (C12H23) -or- Dual Enrollment Business Management (C12H01) -and/or- Principles of Management CLEP
			Industry Certification: Google Suite	
Office Management	Computer Applications (C12H19)	Business Communications (C12H16)	Business Management (C12H17) -or- Statewide Dual Credit Introduction to Business (C12H44) -or- Dual Enrollment Business Management (C12H01) -and/or- Principles of Management CLEP -or- Cambridge AS Business (C12H14)	Advanced Computer Applications (C12H25) -or- Dual Enrollment Office Management (C12H02) -and/or- Information Systems CLEP
			Industry Certification: Google Suite	Industry Certification: Microsoft Office Specialist: (Excel) (PowerPoint) (Word) -and/or- Microsoft Office Expert -and/or- Microsoft Officer Master

Health Services Administration	Introduction to Business & Marketing (C12H26) -or- Health Science Education (C14H14)	Health Information Technology (C12H34)	Business Management (C12H17) -or- Statewide Dual Credit Introduction to Business (C12H44) -or- Dual Enrollment Health Services Administration (C12H03) -or- Cambridge AS Business (C12H14)	Health Services Administration Practicum (C12H38) -or- Dual Enrollment Health Services Administration (C12H03)
			Industry Certification: Google Suite	
Human Resources Management	Introduction to Business & Marketing (C12H26)	Business Communications (C12H16)	Human Resources Management (C12H36) -or- Dual Enrollment Human Resources Management (C12H39)	Human Resources Management Practicum (C12H37) -or- Dual Enrollment Human Resources Management (C12H39)
			Industry Certification: Google Suite	

¹ Satisfies ½ credit of Economics required for graduation.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **American Business Legal Systems** (C12H20) and **Business Economics** (C12H21) are supplemental courses which can be offered in addition to courses within the Business Management and Human Resources Management programs of study but do not count toward concentrator status.

Education & Training

Program of Study	Level 1	Level 2	Level 3	Level 4
Teaching as a Profession (K-12)	Fundamentals of Education (C25H05)	Teaching as a Profession I (C25H04)	Teaching as a Profession II (C25H06) -or- Dual Enrollment Teaching as a Profession (K-12) (C25H02)	Teaching as a Profession Practicum (C25H07) -or- Dual Enrollment Teaching as a Profession (K-12) (C25H02)
Early Childhood Education Careers	Early Childhood Education Careers I (C23H01)	Early Childhood Education Careers II (C23H02)	Early Childhood Education Careers III (C23H03) -or- Dual Enrollment Early Childhood Education Careers (C23H00)	Early Childhood Education Careers IV (C23H04) -or- Dual Enrollment Early Childhood Education Careers (C23H00)
	TECTA Center-Based Orientation Certificate			Industry Certification: Child Development Associate (CDA)
Educational Therapy and Support	Educational Therapy and Support I (C25H10)	Educational Therapy and Support II (C25H11)	Educational Therapy and Support III (C25H12) -or- Dual Enrollment Educational Therapy and Support (C25H14)	Educational Therapy and Support Practicum (C25H13) -or- Dual Enrollment Educational Therapy and Support (C25H14)

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Lifespan Development** (C19H17) is a supplemental course which can be offered in addition to courses within the Early Childhood Education Careers program of study but does not count toward concentrator status.

Finance

Program of Study	Level 1	Level 2	Level 3	Level 4
Accounting	Introduction to Business & Marketing (C12H26)	Accounting I (C12H27) -or- Cambridge IGCSE Accounting (C12H10)	Accounting II (C12H28) -or- Dual Enrollment Accounting (C12H05) -or- Cambridge AS/A Accounting (C12H11)	Financial Planning (C12H18) -or- Statistics (G02H37) -or- AP Statistics (G02H26) -and/or- Dual Enrollment Accounting (C12H05) -and/or- Financial Accounting CLEP
			Industry Certification: Quick Books Certified User	
Banking and Finance	Introduction to Business & Marketing (C12H26)	Accounting I (C12H27) -or- Cambridge IGCSE Accounting (C12H10)	Banking and Finance (C12H22) -or- Dual Enrollment Banking & Finance (C12H06)	Financial Planning (C12H18) -or- Dual Enrollment Banking & Finance (C12H06)

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Personal Finance** (C12H24) is a course required for graduation but does not count toward concentrator status in a program of study.

Government & Public Administration

Program of Study	Level 1	Level 2	Level 3	Level 4
Public Management and Administration	Principles of Public Service (C15H14)	Public Management and Administration (C15H16)	Public Law and Budgeting (C15H15) -or- Dual Enrollment Public Management & Administration (C15H06)	AP US Government & Politics (G04H26) -or- Success Skills Through Service Learning (C15H13) -or- Dual Enrollment Public Management & Administration (C15H06)
Leadership in Government	JROTC I (G08H04)	JROTC II (G08H05)	U.S. Government and Civics (G04H12) -or- JROTC III (G08H06)	Success Skills in Service Learning (C15H13) -or- JROTC IV (G08H07)

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.

Health Science

Program of Study	Level 1	Level 2	Level 3	Level 4
Public Health	Health Science Education (C14H14)	Behavioral and Community Health (C14H17)	Global Health and Epidemiology (C14H19) -or- Dual Enrollment Public Health (C14H01)	Public Health Practicum (C14H23) -or- Dual Enrollment Public Health (C14H01)
			Industry Certification: OSHA 10 General Industry	
Diagnostic Services	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Diagnostic Medicine (C14H12) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Diagnostic Medicine (C14H12) -or- Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Dual Enrollment Diagnostic Services (C14H02) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Cardiovascular Services (C14H18) -and/or- Clinical Internship (C14H11) -or- Dual Enrollment Diagnostic Services (C14H02)
			Industry Certification: OSHA 10 General Industry	Industry Certification following C14H18 AND C14H11: Certified EKG Technician
Nursing Services	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Medical Therapeutics (C14H15) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Medical Therapeutics (C14H15) -or- Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Dual Enrollment Nursing Services (C14H03) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Nursing Education (C14H16) -and/or- Clinical Internship (C14H11) -or- Dual Enrollment Nursing Services (C14H03)

			Industry Certification: OSHA 10 General Industry	Industry Certification: Certified Nursing Assistant (CNA) -and/or- Industry Certification following C14H16 AND C14H11: Certified Patient Care Technician (CPCT)
Emergency Services	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Medical Therapeutics (C14H15) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Medical Therapeutics (C14H15) -or- Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Dual Enrollment Emergency Services (C14H04) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Emergency Medical Services ¹ (C14H13) -or- Emergency Medical Services Practicum (C14H24) -or- Dual Enrollment Emergency Services (C14H04)
			Industry Certification: OSHA 10 General Industry	Industry Certification: Emergency Medical Responder
Therapeutic Services	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- One option from Level 3 -or- Dual Enrollment Anatomy and Physiology (G03H43)	Anatomy and Physiology ¹ (G03H31 or C14H09) if the student did not take it as Level 2, he/she must take it as Level 3 course. For students who took Level 2 A&P, choices include: Dental Science (C14H21) -or- Pharmacological Science (C14H20) -or- Nutrition Science and Diet Therapy ¹ (C19H16) -or- Medical Therapeutics (C14H15) -or- Dual Enrollment Therapeutic Services (C14H05) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Clinical Internship (C14H11) -or- Dual Enrollment Therapeutic Services (C14H05)

			Industry Certification following C14H20 AND C14H11: Certified Pharmacy Technician Industry Certification following C14H21 AND C14H11: National Entry Level Dental Assistant (NELDA)	Industry Certification following C14H15 AND C14H11: Certified Clinical Medical Assistant Industry Certification: OSHA 10 General Industry
Sport and Human Performance	Health Science Education (C14H14)	Anatomy and Physiology ¹ (G03H31 or C14H09) -or- Rehabilitation Careers (C14H08) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Anatomy and Physiology ¹ (G03H31 or C14H09) if the student did not take it as Level 2, he/she must take it as Level 3 course. For students who took Level 2 A&P, choices include: Rehabilitation Careers (C14H08) -or- Medical Therapeutics (C14H15) -or- Dual Enrollment Exercise Physiology (C14H06) -or- Dual Enrollment Anatomy and Physiology (G03H43)	Exercise Science (C14H22) -or- Clinical Internship (C14H11) -or- Dual Enrollment Exercise Physiology (C14H06)
			Industry Certification: OSHA 10 General Industry	Industry Certification following C14H22 AND C14H11: Certified Personal Trainer

¹ Satisfies one lab science credit for graduation.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Medical Terminology** (C14H07) is a supplemental course which can be offered in addition to courses within the Health Science career cluster but does not count toward concentrator status

Hospitality & Tourism

Program of Study	Level 1	Level 2	Level 3	Level 4
Culinary Arts	Culinary Arts I (C16H06)	Culinary Arts II (C16H07)	Culinary Arts III (C16H08) -or- Dual Enrollment Culinary Arts (C16H01)	Culinary Arts IV (C16H09) -or- Dual Enrollment Culinary Arts (C16H01)
			Industry Certification: ServSafe Food Manager -and/or- Certified Fundamentals Cook (CFC)	
Hospitality and Tourism Management	Hospitality & Tourism Exploration (C16H10) -or- Cambridge IGCSE <u>Travel & Tourism</u> (C16H03)	Hospitality Marketing (C16H13) -or- Cambridge International AS Level <u>Travel & Tourism</u> (C16H04)	Hospitality Management (C16H11) -or- Dual Enrollment Hospitality & Tourism Management (C16H02)	Event Planning & Management (C16H12) -or- Dual Enrollment Hospitality & Tourism Management (C16H02)
			Industry Certification: Certified Hospitality & Tourism Management Professional (CHTMP)	

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.

Human Services

Program of Study	Level 1	Level 2	Level 3	Level 4
Human and Social Sciences	Introduction to Human Studies (C19H19)	Lifespan Development (C19H17)	Family Studies (C19H18) -or- Dual Enrollment Human and Social Sciences (C19H02) -or- Cambridge IGCSE <u>Sociology</u> (G04H65) -or- Human Growth and Development CLEP	Human Services Practicum (C19H20) -and/or- Psychology (G04H15) -and/or- Sociology (G04H14) -or- Dual Enrollment Human and Social Sciences (C19H02)
			Industry Certification: Tennessee Specific Industry Certification for Human and Social Sciences (in pilot)	
Dietetics and Nutrition	Introduction to Human Studies (C19H19)	Nutrition Across the Lifespan (C19H15) -or- Cambridge IGCSE <u>Food & Nutrition</u> (C19H08)	Nutrition Science and Diet Therapy (C19H16) -or- Dual Enrollment Dietetics & Nutrition (C19H03)	Human Services Practicum (C19H20) -and/or- Psychology (G04H15) -and/or- Sociology (G04H14) -or- Dual Enrollment Dietetics & Nutrition (C19H03)
			Industry Certification: Tennessee Specific Industry Certification for Dietetics & Nutrition (in pilot)	

Cosmetology	Cosmetology I (C19H12)	Cosmetology II (C19H14)	Cosmetology III (C19H13) -or- Dual Enrollment Cosmetology (C19H04)	Cosmetology IV (C19H21) -or- Dual Enrollment Cosmetology (C19H04)
				Industry Certification: TN Cosmetology & Barber Examiners— TN Cosmetologist 1010
Barbering	Barbering I (C19H09)	Barbering II (C19H10)	Barbering III (C19H11) -or- Dual Enrollment Barbering (C19H05)	Entrepreneurship ¹ (C12H31) -or- Dual Enrollment Barbering (C19H05)
			Industry Certification: TN Cosmetology & Barber Examiners— TN Master Barber 1010	

¹ Satisfies ½ credit of Economics required for graduation.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.

Information Technology

Program of Study	Level 1	Level 2	Level 3	Level 4
Coding	Computer Science Foundations (C10H11) -or- Cambridge IGCSE Computer Science (C10H07)	Coding I (C10H14) -or- AP Computer Science Principles (G02H44)	Coding II (C10H15) -or- Mobile App Development (C10H22) -or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Coding (C10H01)	Coding Practicum (C10H08) -and/or- AP Computer Science A (G02H45) -and/or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Coding (C10H01) -or- Cambridge International AS Level Computer Science (C10H25)
	Industry Certification: CompTIA IT Fundamentals		Industry Certification: Microsoft Technology Associate Software Development Fundamentals -and/or- CIW Web Foundation -and/or- JavaScript Specialist -and/or- Advanced HTML5/CSS3	
Networking Systems	Computer Science Foundations (C10H11)	Computer Systems (C10H10)	Networking (C10H13) -or- Dual Enrollment Networking Systems (C10H02)	Cabling and Internetworking (C10H09) -and/or- IT Clinical Internship (C10H12) -or- Dual Enrollment Networking Systems (C10H02)
	Industry Certification: CompTIA IT Fundamentals	Industry Certification: Comp TIA A+ -and/or- Cisco Certified Entry Network Tech (CCENT)	Industry Certification: CompTIA Network + -and/or- Microsoft Technology Associate Infrastructure -and/or- Cisco IT Essentials PC Hardware & Software Certification -and/or- Cisco Certified Network Associate (CCNA)	

Web Design	Computer Science Foundations (C10H11) -or- Cambridge IGCSE <u>Information and Communication Technology</u> (C10H26)	Web Design Foundations (C10H16) -and/or- AP Computer Science Principles (G02H44)	Web Site Development (C10H17) -and/or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Web Design (C10H03)	Web Design Practicum (C10H18) -and/or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Web Design (C10H03)
	Industry Certification: CompTIA IT Fundamentals		Industry Certification: CIW Web Design Specialist -and/or- CIW Web Foundation -and/or- JavaScript Specialist -and/or- Advanced HTML5/CSS3	
Cybersecurity	Computer Science Foundations (C10H11)	Cybersecurity I (C10H19) -and/or- AP Computer Science Principles (G02H44)	Cybersecurity II (C10H20) -and/or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Cybersecurity (C10H24)	Cybersecurity Practicum (C10H21) -and/or- AP Computer Science Principles (G02H44) Dual Enrollment Cybersecurity (C10H24)
	Industry Certification: CompTIA IT Fundamentals	Industry Certification: CompTIA A+	Industry Certification: CompTIA Network +	Industry Certification: CompTIA Security + -and/or- Associate of ISC2

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Introduction to Geographic Information Systems** (C03H14) is a supplemental course which can be offered in addition to courses within the Cybersecurity program of study but does not count toward concentrator status.

Law, Public Safety, Corrections, & Security

Program of Study	Level 1	Level 2	Level 3	Level 4
Criminal Justice and Correction Services	Criminal Justice I (C15H10)	Criminal Justice II (C15H11)	Criminal Justice III: Forensic Criminal Investigations (C15H12) -or- Statewide Dual Credit: Criminal Justice (C15H21) ¹ -or- Dual Enrollment Criminal Justice and Correction Services (C15H08)	Criminal Justice Practicum (C15H17) -or- Dual Enrollment Criminal Justice and Correction Services (C15H08)
Fire Management Services	Principles of Fire and Emergency Services (C15H03)	Fire Prevention (C15H04)	Fire Science I (C15H01) -or- Dual Enrollment Fire Management Services (C15H00)	Fire Science II (C15H02) -or- Dual Enrollment Fire Management Services (C15H00)
Pre-Law	Pre-Law I (C15H18)	Pre-Law II (C15H19)	Pre-Law III (C15H20) -or- Dual Enrollment Pre-Law (C15H09)	Success Skills in Service Learning (C15H13) -or- AP U.S. Government and Politics (G04H26) -or- Dual Enrollment Pre-Law (C15H09)

¹ Statewide Dual Credit Criminal Justice **requires** Criminal Justice I **and** Criminal Justice II as prerequisite courses. Students cannot take Statewide Dual Credit Criminal Justice without having already completed the first two courses in the program of study.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **American Business Legal Systems** (C12H20) is a supplemental course which can be offered in addition to courses within the Legal and Correction Services program of study but does not count toward concentrator status.

Marketing, Distribution, & Logistics

Program of Study	Level 1	Level 2	Level 3	Level 4
Marketing Management	Introduction to Business & Marketing (C12H26)	Marketing and Management I: Principles ¹ (C12H29)	Marketing and Management II: Advanced Strategies (C12H30) -or- Social Media Marketing and Analytics (C12H46) -or- Dual Enrollment Marketing Management (C12H08) -and/or- Principles of Marketing CLEP	Advertising and Public Relations (C12H32) -or- Retail Operations ¹ (C12H33) -or- Event Planning & Management (C16H12) -or- Dual Enrollment Marketing Management (C12H08) -and/or- Principles of Marketing CLEP
			Industry Certifications: Hootsuite Platform Certification -and/or- Hootsuite Social Marketing Certification	
Entrepreneurship	Introduction to Business & Marketing (C12H26)	Marketing and Management I: Principles ¹ (C12H29)	Entrepreneurship ¹ (C12H31) -or- Dual Enrollment Entrepreneurship (C12H09) -or- Cambridge IGCSE Enterprise (C12H45)	Business & Entrepreneurship Practicum (C12H35) -or- Virtual Enterprise International ¹ (C12H23) -or- Dual Enrollment Entrepreneurship (C12H09)
Supply Chain Management	Introduction to Business & Marketing (C12H26) -or- Marketing and Management I: Principles ¹ (C12H29)	Foundations of Supply Chain Management (C12H40)	Supply Chain Management I (C12H41) -or- Dual Enrollment Supply Chain Management (C20H05)	Supply Chain Management II (C12H42) -or- Supply Chain Management Practicum (C12H43) Dual Enrollment Supply Chain Management (C20H05)

		Industry Certification: Microsoft Office Specialist (Excel)	Industry Certification: Certified Logistics Technician	
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¹ Satisfies ½ credit of Economics required for graduation.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Business Communications** (C12H16) is a supplemental course which can be offered in addition to courses within these programs of study but does not count toward concentrator status.

STEM

Program of Study	Level 1	Level 2	Level 3	Level 4
Engineering	Principles of Engineering and Technology (C21H04)	Engineering Design I (C21H05) -or- AP Computer Science Principles (G02H44) -or- Cambridge IGCSE Design and Technology (C21H03)	Engineering Design II (C21H06) -or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Engineering (C21H00)	Engineering Practicum (C17H21) -and/or- AP Physics (G03H27, G03H28, G03H24, or G03H29) -or- AP Computer Science A (G02H45) -or- Dual Enrollment Engineering (C21H00) -or- Cambridge International AS <u>Design and Technology</u> (C10H05)
	Industry Certification: Precision Measurement Instruments Certifications (Snap-On)	Industry Certification: Certified Solidworks Associate (CSWA)- Academic -and/or- Autodesk Inventor Certified User		
Technology	Principles of Engineering and Technology (C21H04)	Digital Electronics (C13H07) -or- AP Computer Science Principles (G02H44)	Robotics & Automated Systems (C13H15) -or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Technology (C21H01)	Engineering Practicum (C17H21) -and/or- AP Physics (G03H27, G03H28, G03H24, or G03H29) -or- AP Computer Science A (G02H45) -or- Dual Enrollment Technology (C21H01)
	Industry Certification: Precision Measurement Instruments Certifications (Snap-On)	Industry Certification: Certified Solidworks Associate (CSWA)- Academic -and/or- Autodesk Inventor Certified User	Industry Certification: FANUC	Industry Certification: Certified Solidworks Associate (CSWA)- Academic -and/or- Autodesk Inventor Certified User

Advanced STEM Applications	STEM I: Foundation (C03H15)	STEM II: Applications (C03H16) -or- AP Computer Science Principles (G02H44)	STEM III: STEM in Context (C03H17) -or- AP Computer Science Principles (G02H44) -or- Dual Enrollment Advanced STEM Applications (C03H01)	STEM IV: STEM Practicum (C03H18) -and/or- AP Calculus AB (G02H24) -or- AP Calculus BC (G02H25) -or- AP Computer Science A (G02H45) -or- AP Biology (G03H10) -or- AP Chemistry (G03H16) -or- AP Physics (G03H27, G03H28, G03H24, or G03H29) -or- Dual Enrollment Advanced STEM Applications (C03H01)
	Industry Certification: Precision Measurement Instruments Certifications (Snap-On)	Industry Certification: Certified Solidworks Associate (CSWA)- Academic -and/or- Autodesk Inventor Certified User		
BioSTEM	BioSTEM I (C21H07)	BioSTEM II (C21H08)	BioSTEM III (C21H09)	BioSTEM Practicum (C21H10)
	Industry Certification: Precision Measurement Instruments Certifications (Snap-On)	Industry Certification: Certified Solidworks Associate (CSWA)- Academic -and/or- Autodesk Inventor Certified User		

Project Lead the Way	Introduction to Engineering (PLTW) (C03H09)	Principles of Engineering (PLTW) (C03H07)	Choice of the following: Aerospace Engineering (PLTW) (C03H11) -or- Civil Engineering & Architecture (PLTW) (C03H10) -or- Biotechnical Engineering (PLTW) (C03H12) -or- Digital Electronics (PLTW) (C03H08) -or- Computer Integrated Manufacturing (PLTW) (C13H11)	Engineering Design and Development (PLTW) (C03H13)
Engineering by Design	Foundations of Technology (EBD) (C03H03)	Technological Design (EBD) (C03H02)	Advanced Design Applications (EBD) (C03H05) -and/or- Advanced Technological Applications (EBD) (C03H04)	Engineering Design (EBD) (C03H06)

Note: Courses marked (EBD) are part of the *Engineering by Design* curriculum package and may require additional costs and training to implement. Courses marked (PLTW) are part of the *Project Lead the Way* curriculum package and may require additional costs and training to implement.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Introduction to Geographic Information Systems** (C03H14) is a supplemental course which can be offered in addition to courses within these programs of study but does not count toward concentrator status.

Transportation

Program of Study	Level 1	Level 2	Level 3	Level 4
Automotive Maintenance and Light Repair	Maintenance and Light Repair I (C20H09)	Maintenance and Light Repair II (C20H10)	Maintenance and Light Repair III (C20H11) -or- Dual Enrollment Automotive Maintenance & Light Repair (C20H01)	Maintenance and Light Repair IV (C20H12) -or- Dual Enrollment Automotive Maintenance & Light Repair (C20H01)
			Industry Certification: Precision Measurement Instruments Certification (includes all subtests)	Industry Certification: Automotive Service Excellence Student Certification: Maintenance & Light Repair
Automotive Collision Repair	Introduction to Collision Repair (C20H20)	Collision Repair: Non-Structural ¹ (C20H13) -or- Collision Repair: Painting & Refinishing ¹ (C20H14)	Collision Repair: Non-Structural ¹ (C20H13) -or- Collision Repair: Painting & Refinishing ¹ (C20H14) -or- Dual Enrollment Automotive & Collision Repair (C20H02)	Collision Repair: Non-Structural ¹ (C20H13) -or- Collision Repair: Painting & Refinishing ¹ (C20H14) -or- Collision Repair: Damage Analysis, Estimating, & Customer Service (C20H19) -or- Dual Enrollment Automotive & Collision Repair (C20H02)
			<p>Industry Certification for C20H13: I-CAR Refinish Technician ProLevel 1 or I-CAR Non-Structural Technician ProLevel 1 or Automotive Service Excellence Student Certification: Nonstructural Analysis/Repair</p> <p>Industry Certification for C20H14: Automotive Service Excellence Student Certification: Painting and Refinishing</p>	

Program of Study	Level 1	Level 2	Level 3	Level 4
Aviation Flight	Introduction to Aerospace (C20H15)	Aviation I: Principles of Flight (C20H16)	Aviation II: Advanced Flight (C20H18) -or- Dual Enrollment Aviation Flight (C20H03)	Work-Based Learning: Career Practicum (C20H17) -or- Dual Enrollment Aviation Flight (C20H03)

¹ May be taught for up to three credits. Implementation options vary; contact the career cluster consultant for more information.

Available courses for elective credit in this cluster:

- **Work-Based Learning: Career Practicum** (C20H17) may substitute for the Level 4 offering in all programs of study.
- **Welding I** (C13H12) and **Welding II** (C13H10) are supplemental courses which can be offered in addition to courses within the Automotive Collision Repair program of study but do not count toward concentrator status.
- **Structural** may be taken at a participating postsecondary institution as a third- or fourth-level course within the Automotive Collision Repair program of study.
- Programs of study in the areas of *Aviation Maintenance* and *Diesel Technology* can be found at a Tennessee College of Applied Technology. Please look at regional campus to determine course offerings. The following dual enrollment course codes apply: **Dual Enrollment Aviation Maintenance** (C20H04) and **Dual Enrollment Diesel Technology** (C20H06).

Middle School

Career Cluster(s)	6 th Grade	7 th Grade	8 th Grade
<ul style="list-style-type: none"> Agriculture, Food, & Natural Resources 		Introduction to Agricultural Sciences (C03X02)	Introduction to Agricultural Sciences (C03X02) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Arts, A/V Technology, & Communications Business Management & Administration Finance Information Technology Marketing 	Keyboarding (G10600)	Keyboarding (G10700)	Keyboarding (G10800) Computer Applications (C12H19) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Education & Training Human Services 	Introduction to Social Health ² (C19X00)	Introduction to Social Health (C19X00)	Introduction to Social Health (C19X00) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Advanced Manufacturing Architecture & Construction STEM Transportation, Distribution, & Logistics 	Exploring Technology (EBD) (C25X00)	Inventions and Innovations (EBD) (C03700)	Technological Systems (EBD) (C03801) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Advanced Manufacturing Architecture & Construction Information Technology STEM Transportation, Distribution, & Logistics 	STEM Explorers (C03600)	STEM Innovators (C03701)	STEM Designers (C03800) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Health Science 		Introduction to Health Science (C14800)	Introduction to Health Science (C14800) Medical Detectives (PLTW) (C03806) Career Exploration* (C25H08)
<ul style="list-style-type: none"> Advanced Manufacturing Architecture & Construction Arts, A/V Technology, & Communications Information Technology STEM Transportation, Distribution, & Logistics 	Design and Modeling (PLTW) (C03X00)	Automation and Robotics (PLTW) (C03X01)	Energy and the Environment (PLTW) (C03802) Flight and Space (PLTW) (C03803) Green Architecture (PLTW) (C03804) Magic of Electrons (PLTW) (C03805) Science and Technology (PLTW) (C03807) Career Exploration* (C25H08)

¹ *Keyboarding* may also be used with 4th and 5th grade students (G10400, G10500). ² *Introduction to Social Health* may also be used with 5th grade students (C19X00).

Note: Courses marked (EBD) are part of the *Engineering by Design* curriculum package and may require additional costs and training to implement. Courses marked (PLTW) are part of the *Project Lead the Way* curriculum package and may require additional costs and training to implement.