Student Industry Certifications Overview

Tennessee Department of Education| Division of College, Career and Technical Education

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Table of Contents

Executive Summary

It is the goal of the department that every student in Tennessee graduates high school prepared for postsecondary coursework and qualified for quality employment. To achieve this, high schools are encouraged to place students in career-aligned learning pathways.

For students focusing in career and technical education (CTE) through one of the programs of study in the 16 nationally recognized career clusters that the department promotes, robust learning pathways should culminate with the achievement of nationally recognized industry certifications, capstone work-based learning experiences, and/or attainment of postsecondary credit hours through early postsecondary opportunities (EPSOs). As it pertains to industry certifications, all department-promoted certifications are aligned with postsecondary and employment opportunities and with the competencies and skills that students should have acquired through their chosen programs of study. Additionally, industry certifications factor into the Ready Graduate indicator, which is part of the new school and district accountability framework under the Every Student Succeeds Act (ESSA).

This overview document outlines the criteria used by the department to identify aligned industry certifications and the role these certifications should play when a robust, aligned student learning pathway is implemented successfully. It is important to note that this is not an exhaustive list of every industry certification available to students but rather a list of stackable credentials and capstone certifications specifically tied to CTE courses and programs of study which meet the department's criteria for promoted industry certifications. See the Appendix at the end of this document for information regarding how promoted industry certifications convert to satisfy elements of the Ready Graduate indicator.

Elements of a Robust, Aligned Learning Pathway

A robust, aligned learning pathway is a pathway embedded with solid partnerships and clear expectations beginning in early grades and continuing through postsecondary education. Courses are not repetitive at each education level but rather build upon each other to produce a professional continuum in which students receive stackable credentials enabling them to succeed at multiple entry and exit points within their academic/career path. Figure 1 outlines the components of a robust, aligned learning pathway.

Figure 1
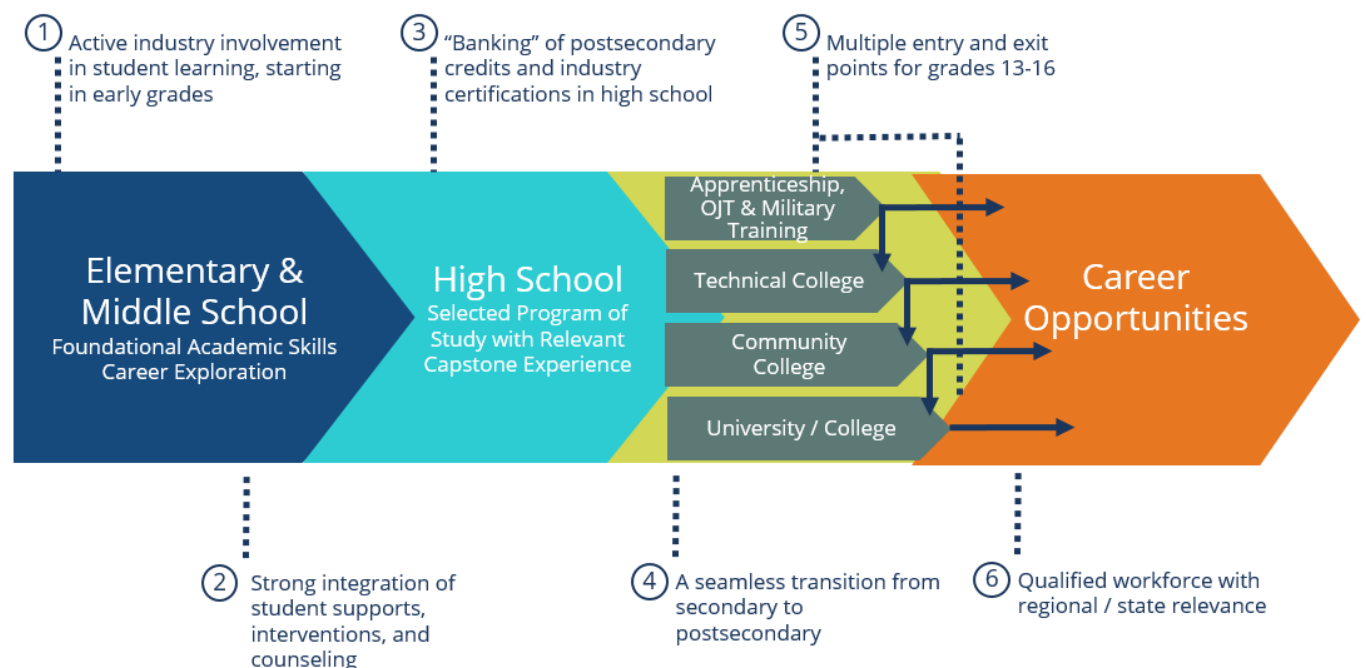
1) **Active industry involvement in student learning starting in early grades**
   Active industry involvement begins early in a student's learning pathway. This involvement can and should take on many different forms and should progress in involvement as the student progresses through his/her learning pathway. This type of involvement can represent (1) curricular alignment with labor market needs, (2) student career site visits/employer visits to schools, (3) industry advisory councils, (4) teacher externships and student internships, and/or (5) active work-based learning experiences and internships.

2) **Strong integration of student supports, interventions, and counseling**
   Students should be supported as they progress through their learning pathway. To ensure students are developing postsecondary and career ready skill sets, robust learning pathways should embed opportunities for students to articulate their career interests and goals through a robust career counseling program. The program must incorporate a team approach to academic development, social and personal development, and postsecondary and career readiness development; recognizing that this is a school effort and not the sole responsibility of the school counselor.

3) **Banking of postsecondary credits and industry certifications in high school**
   Students should be demonstrating proficiency as they progress through their learning pathway. Pathways should embed opportunities for students to demonstrate postsecondary and career readiness skills through early postsecondary and industry certifications. A learning pathway and program of study should be seamless from high school through postsecondary as students build upon prior learning with stackable credentials at various levels of education. Each credential or degree a student receives will, ideally, translate to the professional continuum in his/her selected career (i.e., promotions, qualifications for higher paying positions, leadership roles, postsecondary credit, etc.).

   Figure 2 below demonstrates this concept. This is an example from the *Welding* program of study in the Advanced Manufacturing career cluster. The American Welding Society (AWS) Entry Level Welder certification serves as a capstone industry certification for this particular program of study. Achievement of this certification reflects attainment of required industry skills in order to be gainfully employed and/or to continue matriculation to a postsecondary degree or credential.

Figure 2
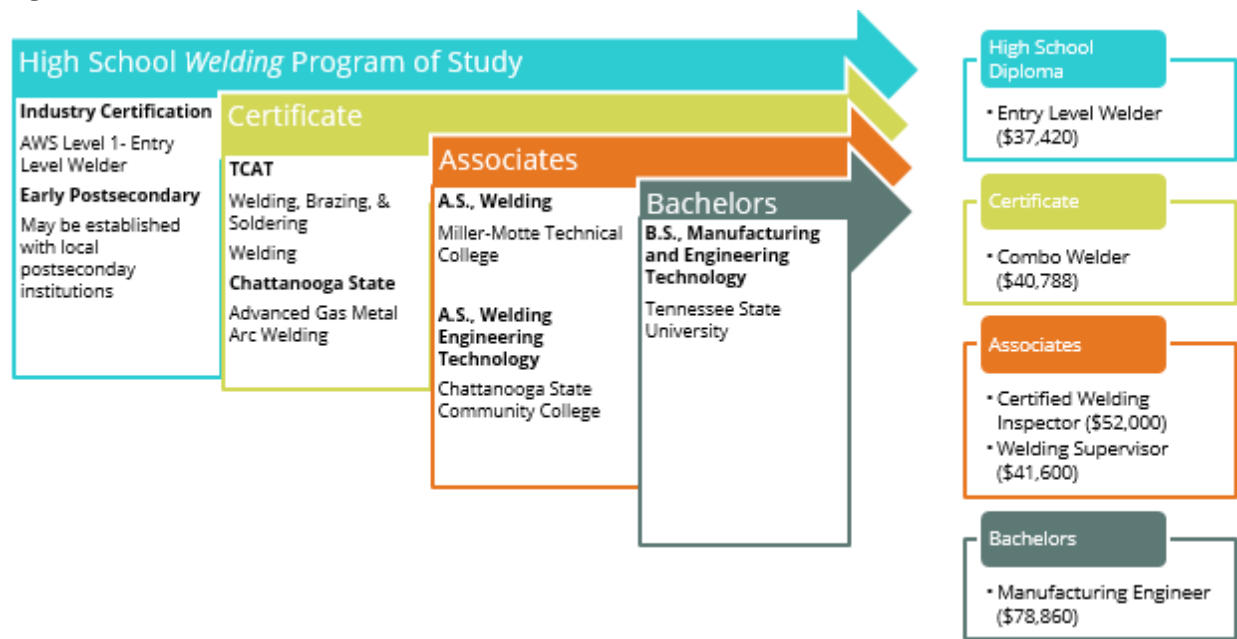
It is important to note that several industry certifications and/or postsecondary credentials can and should be included in a student's pathway. Stackable credentials, such as the AWS Level 1 Entry Level Welder, allow a student to demonstrate proficiency along his/her learning path and continue to advance their learning. These certifications build a student's confidence and demonstrate a valuable portfolio of skills.

4) **A seamless transition from secondary to postsecondary**
Robust, aligned learning pathways have clear goals for student entry into postsecondary. They detail the credential and/or degree a student needs to continue along a desired career path. As Figures 1 and 2 demonstrate, there must be clear, aligned pathways for students to advance from secondary to postsecondary. Middle school courses should lay the foundation for a student's chosen program of study in high school, which should in turn prepare that student for the next level of postsecondary coursework—whether this is at an apprenticeship, a Tennessee College of Applied Technology, a two-year community college, or a four-year university. At each stage of the pathway, the student should be building upon the knowledge and skills learned in previous coursework and demonstrating ongoing academic, technical, and soft-skill mastery.

5) **Multiple entry and exit points for grades 13-16**
Robust, aligned pathways with multiple entry and exit points prepare students for life-long growth in their chosen careers. Consider the example of the *Welding* program of study in the advanced manufacturing career cluster. The student is prepared to exit the learning pathway upon high school graduation with an AWS certification and go directly into the workforce. However, the student will be equally prepared to take that achieved certification

and apply it towards entrance into the advanced gas metal arc welding program at a community college and/or move into a manufacturing and engineering technology program at a four-year university.

6) **Qualified workforce with regional/state relevance**
   Robust, aligned pathways must connect to legitimate opportunities for students in and around their communities. Department promoted programs of study, if implemented with fidelity, should feed directly into related postsecondary programs that are aligned to the needs of regional labor and economic and community development data (see Figure 3). These data should reflect high-skill, high-wage, and high-growth opportunities so that students and parents see and understand the viable opportunities for employment upon graduation from secondary and postsecondary.

Figure 3
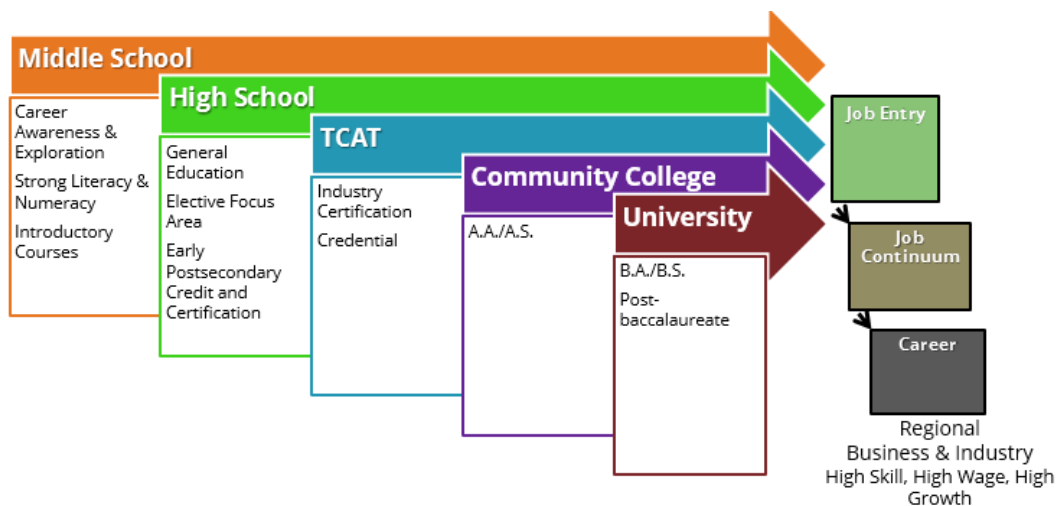
Goals for Alignment of Industry Certifications

The approach taken to align industry certifications is designed to ensure students are presented with viable seamless learning pathways. This designed approach contains three main goals: 1) increase student attainment of department-promoted industry certifications; 2) increase student transference of department-promoted industry certifications to meaningful postsecondary and workforce opportunities following high school graduation; and 3) provide and ensure consistency in the promotion of all department-promoted industry certifications with various stakeholders.

1) **Increase student attainment** of department-promoted industry certifications
   a. Increase the number of students sitting for promoted certification exams
   b. Increase pass rates for promoted certification exams

2) **Increase transference** of department-promoted industry certifications to meaningful opportunities for students following high school graduation
   a. Increase the number of credit and/or hours awarded upon entering a postsecondary program
   b. Increase employment rates and workforce matriculation

3) **Ensure consistency** in the promotion of department-promoted industry certifications with various stakeholders, including students, school personnel, postsecondary, and industry partners
   a. Increase student access to and enrollment in capstone experiences in CTE programs of study
   b. Increase the number of students earning industry certifications through the ESSA Ready Graduate indicator

c. Increase validity of data on industry certification attainment by obtaining data directly from industry certification agencies

Criteria for Promotion of Certifications

It is important that department-promoted certifications meet a set of criteria designed to ensure students can transfer attained certifications to postsecondary and the workforce. Certifications should further a student's pathway not hinder it. In so keeping, the department uses the following criteria to determine which industry certifications to promote:

1) Industry recognized and valued
2) Aligned to CTE course and/or program of study
3) Transference to postsecondary
4) Transference to high quality employment

1) Industry Recognized and Valued
For any certification to be promoted, it is essential that the certification is recognized <u>and</u> valued by the targeted industry. The industry certifications promoted by the department have been vetted by respective career cluster industry advisory councils (composed of Tennessee industry representatives). If an identified certification was recognized but not valued, it was not included in the final department-promoted list. All promoted certifications must show both.

2) Aligned to CTE Course and/or Program of Study
Department-promoted industry certifications should be representative of the learning a student has mastered through the successful completion of an aligned CTE course and/or program of study. It is important that this alignment exists and that the content in the certification is not simply representative of a few standards within a course.

Industry certifications can be stackable credentials such as Microsoft Office Suite certifications (as identified with the Office Management program of study), or they can be capstone, meaning they represent the culmination of acquired skills through the completion of a particular program of study, such as Certified Nursing Assistant certification as shown by Figure 4 below. Regardless, students should be well prepared through their CTE program of study to pass the industry certification exam. Students should not have to take additional courses to be able to obtain the industry certification, but rather have had the content embedded within their daily instruction through their CTE courses. CTE course standards align to industry-recognized and valued certifications and ensure that this alignment exists to appropriately prepare students.

Figure 4

Health Science

| Program of Study	Level 1	Level 2	Level 3	Level 4
Nursing Services	Health Science Education (5998)	Anatomy and Physiology[2] (3251 or 5991) -or- Medical Therapeutics (5999)	Medical Therapeutics (5999) -or- Anatomy and Physiology[2] (3251 and 5991) -or- **Dual Enrollment** Nursing Services (4099)	Nursing Education (6000) -or- **Dual Enrollment** Nursing Services (4099)
				Industry Certification: Certified Nursing Assistant (CNA)

3) Transference to Postsecondary

Transferability to postsecondary refers to industry certifications that are accepted for credit or hours by postsecondary institutions. All of the department-promoted capstone industry certifications count for postsecondary credit at Tennessee Colleges of Applied Technology. Students who obtain these certifications can transfer clock hours toward the aligned program offered by Tennessee Colleges of Applied Technology. The same would apply for community colleges that offer these certifications as well. This was a major factor in the decision for industry certifications to be included in the department's ESSA plan as a part of the Ready Graduate indicator. Industry certifications carry postsecondary credit and would allow students to utilize these as EPSOs. The amount of credit depends on the level of rigor of the industry

certification and the postsecondary program to which it aligns. See the appendix for the list of industry certifications and their conversation to ESSA Ready Graduate indicator.

4) Transference to High-Quality Employment

In addition to being industry valued and recognized, department-promoted industry certifications must lead to high quality employment. Therefore, all promoted certifications should translate into job opportunities above entry level positions. For example, the attainment of a Level I Siemens Certified Mechatronic Systems Assistant certification through the Mechatronics program of study (Figure 5) allows a student to qualify for a position as an industrial engineering technician in the advanced manufacturing industry sector.

Figure 5
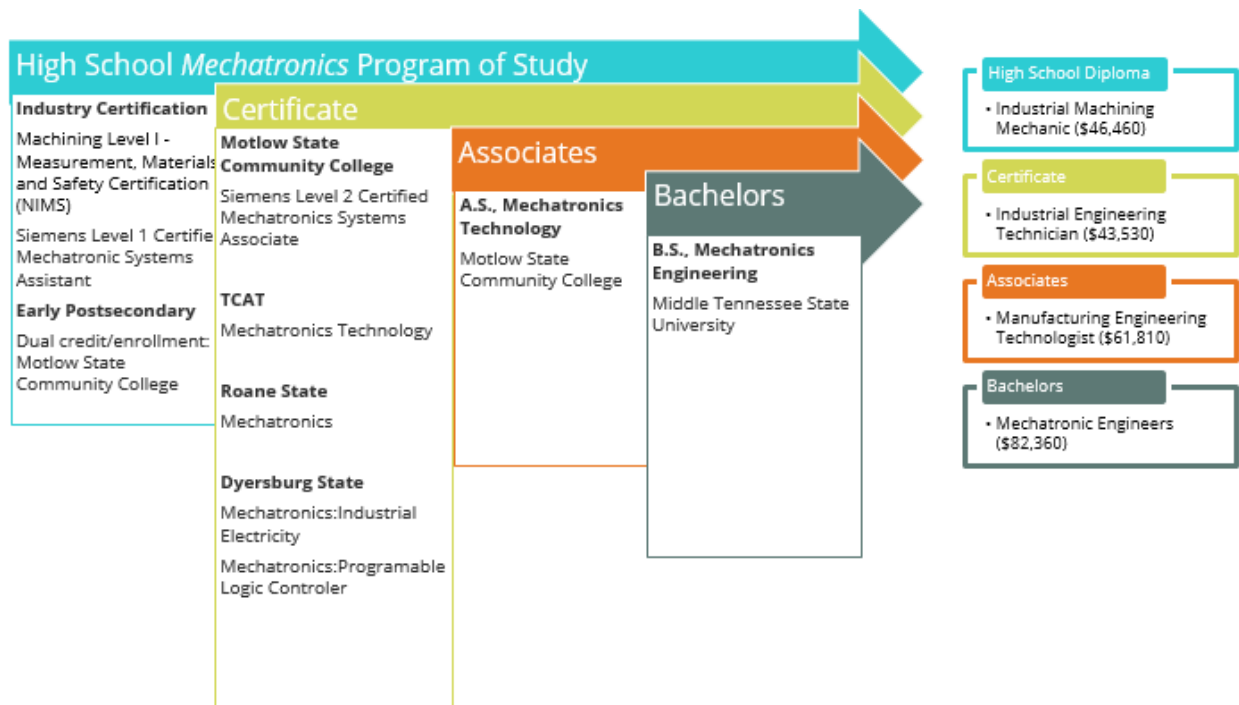
Conclusion

As districts across the state seek to prepare more students for success after high school in postsecondary and the workforce, department-promoted industry certifications should be part of any district's larger strategic approach and priorities, especially as districts and schools work to meet the Ready Graduate indicator. As stated earlier, it is the goal of the department that every student in Tennessee graduates high school prepared for postsecondary coursework and

qualified for quality employment. For more details about department-promoted industry certifications, please contact the office of career and technical education and/or refer to the department's promoted programs of study and courses found on the department's website.

Appendix: Promoted Industry Certifications and the ESSA Ready Graduate Conversion

The ESSA Ready Graduate indicator is the high school's graduation rate multiplied by the percentage of students who are *Ready Graduates*. A Ready Graduate is a student who meets one of the following criteria (students can only be "counted" once):

1) scoring **21 or higher on ACT** OR

2) completing **4 EPSOs** OR

3) completing **2 EPSOs** + **earning industry certification** (on a CTE pathway leading to a credential) OR

4) completing **2 EPSOs** + **designated score TBD** on **ASVAB AFQT.**

For more information on this ESSA accountability measure, see the Ready Graduate FAQ.

The rigor of some of the industry certifications, especially those earned in the latter part of a student's program of study, can carry a significant amount of postsecondary credit. Therefore, these rigorous industry certifications carry more weight and will allow students to earn Ready Graduate indicator credit beginning in the 2017-18 school year. **Students need only to earn the certification for the conversions in Figure 7 below to be accounted for in the ESSA Ready Graduate indicator. For students to be successful in earning the industry certification, students will need to have participated in the aligned CTE course(s).**

The department partnered with the Tennessee Colleges of Applied Technology to determine the number of clock hours each industry certification would carry. Upon doing so, the calculation of **30 clock hours to one credit hour** (the formula used to determine financial aid from TSAC) was utilized to conduct an ESSA Ready Graduate indicator conversion. The conversion took into account the equivalency of a typical three-credit postsecondary course. If the credit hour conversion was more than nine credit hours, then the industry certification would satisfy the entirety of the ESSA Ready Graduate indicator option of completing two EPSOs and earning an industry certification. An example of this calculation is shown below in Figure 6.

Figure 6

Industry certification	Total clock hours awarded	Credit hour conversion (TSAC calculation is 30 clock hours to one credit hour)	ESSA conversion
Certified EKG Technician	130	4.33	industry certification only
Child Development Associate (CDA)	247	8.23	industry certification + 1 EPSO
Certified Pharmacy Technician	1296	43.2	Industry certification + 2 EPSO

Figure 7 below includes the following:

1) **Industry Certification**: the name of the industry certification the student would earn.
2) **Aligned CTE Course**: the course in which the student would sit for the certification exam. The aligned CTE course prepares the student with the knowledge and skills to be successful in passing the industry certification.
3) **Program of Study**: the sequence of courses in which the CTE course is provided.
4) **Career Cluster:** the occupational area in which the program of study is located. The department has 16 nationally recognized career clusters.
5) **ESSA Conversion**: the calculation of the total amount of clock hours awarded by a Tennessee College of Applied Technology to equivalent credit hours. An industry

certification must carry no less than nine credit hours to count as an industry certification **and** two EPSOs.

    a. **Industry certification only**: The industry certification counts only as an industry certification. To satisfy the Ready Graduate indicator, the student would still need to complete two EPSOs.

    b. **Industry certification + 1 EPSO:** The industry certification counts as an industry certification **and** one EPSO. To satisfy the Ready Graduate indicator, the student would still need to complete one more EPSO.

    c. **Industry certification + 2 EPSOs:** The industry certification counts as an industry certification **and** two EPSOs. No additional courses are needed to satisfy the Ready Graduate indicator.

Figure 7

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
American Welding Society Certified Welder	Welding II (6033)	Welding	Advanced Manufacturing	industry certification + 2 EPSOs
Associate of ISC²	Cybersecurity Practicum (6177)	Cybersecurity	Information Technology	industry certification + 1 EPSO
Autodesk Inventor from AutoCAD	Engineering Practicum (6141) STEM IV: Practicum (6147)	Engineering, Technology, and Applied STEM	STEM	industry certification + 1 EPSO
Automotive Service Excellence Student Certification: Maintenance & Light Repair Certification	Maintenance & Light Repair IV (5882)	Automotive Maintenance and Light Repair	Transportation, Distribution, & Logistics	industry certification only
Automotive Service Excellence Student Certification: Nonstructural Analysis/Repair	Collision Repair: Non-structural (6062)	Automotive Collision Repair	Transportation, Distribution, & Logistics	industry certification only
Automotive Service Excellence Student Certification: Painting and Refinishing	Collision Repair: Painting & Refinishing (6063)	Automotive Collision Repair	Transportation, Distribution, & Logistics	industry certification only

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
Automotive Service Excellence Student Certification: Structural Analysis/Repair	Collision Repair: Structural (6064)	Automotive Collision Repair	Transportation, Distribution, & Logistics	industry certification only
AWS SENSE Entry Level Welder	Welding I (6078)	Welding	Advanced Manufacturing	industry certification + 2 EPSOs
AWS SENSE Advanced Level Welder	Welding II (6033)	Welding	Advanced Manufacturing	industry certification + 2 EPSOs
CCNA Cisco Certified Network Associate	Networking (6097)	Networking Systems	Information Technology	industry certification + 1 EPSO
Certified Clinical Medical Assistant	Medical Therapeutics (5999) followed by Clinical Internship (5993)	Therapeutic Clinical Services	Health Science	industry certification + 2 EPSOs
Certified EKG Technician	Cardiovascular Services (6131)	Diagnostic Services	Health Science	industry certification only
Certified Nursing Assistant	Nursing Education (6000)	Therapeutic Nursing Services	Health Science	industry certification only
Certified Personal Trainer	Exercise Science (6170) followed by Clinical Internship (5993)	Clinical Exercise Physiology	Health Science	industry certification + 1 EPSO
Certified Pharmacy Technician	Pharmacological Science (6133)	Therapeutic Clinical Services	Health Science	industry certification + 2 EPSOs
Certified Solidworks Associate (CSWA)-Academic	Engineering Practicum (6141) STEM IV: Practicum (6147)	Engineering, Technology, and Applied STEM	STEM	industry certification + 1 EPSO
Child Development Associate (CDA) Credential	Early Childhood Education Careers (ECEC) III (6017)	Childhood Development Services	Human Services	industry certification + 1 EPSO
Cisco Certified Entry Network Tech (CCENT)	Computer Systems (6094)	Networking Systems	Information Technology	industry certification + 1 EPSO
CIW Web Design Specialist	Web Site Development (6101)	Web Design	Information Technology	industry certification + 1 EPSO

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
Commercial Pesticide Certification – Core (03) (Note: Must be 18 years old)	Landscaping and Turf Science (5951)	Horticulture Science	Agriculture, Food, & Natural Resources	industry certification only
CompTIA A+	Cybersecurity I (6175)	Cybersecurity	Information Technology	industry certification + 1 EPSO
CompTIA A+	Computer Systems (6094)	Networking Systems	Information Technology	industry certification + 1 EPSO
CompTIA A+	Coding II (6099)	Coding	Information Technology	industry certification + 1 EPSO
CompTIA IT Fundamentals	Computer Science Foundations (6905)	All Information Technology POS	Information Technology	industry certification only
CompTIA Network+	Cybersecurity II (6176)	Cybersecurity	Information Technology	industry certification + 2 EPSOs
CompTIA Network+	Networking (6097)	Networking Systems	Information Technology	industry certification + 2 EPSOs
CompTIA Security +	Cybersecurity Practicum (6177)	Cybersecurity	Information Technology	industry certification + 2 EPSOs
Emergency Medical Responder (First Responder)	Emergency Medical Services (5995)	Emergency Services	Health Science	industry certification + 1 EPSO
EPA Section 608 Universal	HVAC (6077)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
FANUC	Robotics & Automated Systems (6143)	Mechatronics	Advanced Manufacturing	industry certification + 1 EPSO
FANUC	Robotics & Automated Systems (6143)	Technology	STEM	industry certification + 1 EPSO
HVAC Excellence Employment Ready Certifications	HVAC (6077)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification + 2 EPSOs

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
HVAC Excellence, Heating, Electrical, Air Conditioning Technology (H.E.A.T.)	HVAC (6077)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
I-CAR Refinish Technician ProLevel 1 or I-CAR Non-Structural Technician ProLevel 1	Collision Repair: Non-structural (6062)	Automotive Collision Repair	Transportation, Distribution, & Logistics	industry certification only
Level I Siemens Certified Mechatronic Systems Assistant	Mechatronics II (6157)	Mechatronics	Advanced Manufacturing	industry certification + 2 EPSOs
Machining Level I - Measurement, Materials, and Safety Certification (NIMS)	Principles of Manufacturing (5922)	All Machining Technology	Advanced Manufacturing	industry certification only
Microsoft Office Expert (pass the two-part Expert Exam in Excel)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Expert (pass the two-part Expert Exam in Word)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Master - Track 1 (Word Expert + Excel Core + Elective)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Master - Track 2 (Excel Expert + Word Core + Elective)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Master - Track 3 (Word Expert + Excel Expert)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Specialist (Excel)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Specialist (PowerPoint)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only
Microsoft Office Specialist (Word)	Advanced Computer Applications (5904)	Office Management	Business Management & Administration	industry certification only

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
Microsoft Technology Associate Software Development Fundamental	Coding II (6099)	Coding	Information Technology	industry certification + 1 EPSO
NCCER Carpentry Level One	Structural Systems I (6164)	Structural Systems	Architecture & Construction	industry certification only
NCCER Carpentry Level Two	Structural Systems II (6165)	Structural Systems	Architecture & Construction	industry certification only
NCCER Construction Technology	Residential & Commercial Construction I (6162)	Residential & Commercial Construction	Architecture & Construction	industry certification only
NCCER Core Curriculum	Fundamentals of Construction (6073)	Residential & Commercial Construction Structural Systems Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
NCCER Electrical Level One	Electrical Systems (6075)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
NCCER Plumbing Level One	Plumbing Systems (6082)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
OSHA 10	Fundamentals of Construction (6073)	Residential & Commercial Construction Structural Systems Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only
OSHA 30 Construction	Residential & Commercial Construction II (6163), Structural Systems II (6165), Electrical Systems (6075)	Residential & Commercial Construction Structural Systems Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only

Industry Certification	Aligned CTE Course	Program(s) of Study	Career Cluster(s)	ESSA Conversion
Certified Production Technician (CPT)	Principles of Manufacturing (5922) Principles of Machining (5929) Principles of Machining II (5923) Manufacturing Practicum (5926)	Machining Technology	Advanced Manufacturing	industry certification + 1 EPSO
ServSafe Food Manager	Culinary Arts III (5981)	Culinary Arts	Hospitality & Tourism	industry certification + 1 EPSO
Snap-On Precision Measurement	Principles of Manufacturing (5922)	All Advanced Manufacturing	Advanced Manufacturing	industry certification only
Tennessee Specific Industry Certification-Animal Science (currently in pilot year)	Veterinary Science (5961)	Veterinary and Animal Science	Agriculture, Food, & Natural Resources	industry certification + 1 EPSO
Tennessee Specific Industry Certification-Dietetics and Nutrition (currently in pilot year)	Nutrition Science and Diet Therapy (6007)	Dietetics and Nutrition	Human Services	industry certification + 1 EPSO
Tennessee Specific Industry Certification-Social Health Services (currently in pilot year)	Family Studies (6136)	Social Health Services	Human Services	industry certification + 1 EPSO
TN Board of Cosmetology & Barbering - TN Cosmetology 1010	Cosmetology IV (6179)	Cosmetology	Human Services	industry certification + 2 EPSOs
TN Board of Cosmetology & Barbering - TN Master Barber 1010	Barbering III (5974)	Barbering	Human Services	industry certification + 2 EPSOs
Universal R-410A	HVAC (6077)	Mechanical, Electrical, & Plumbing (MEP) Systems	Architecture & Construction	industry certification only