



Department of
Education

Student Industry Certifications Overview

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

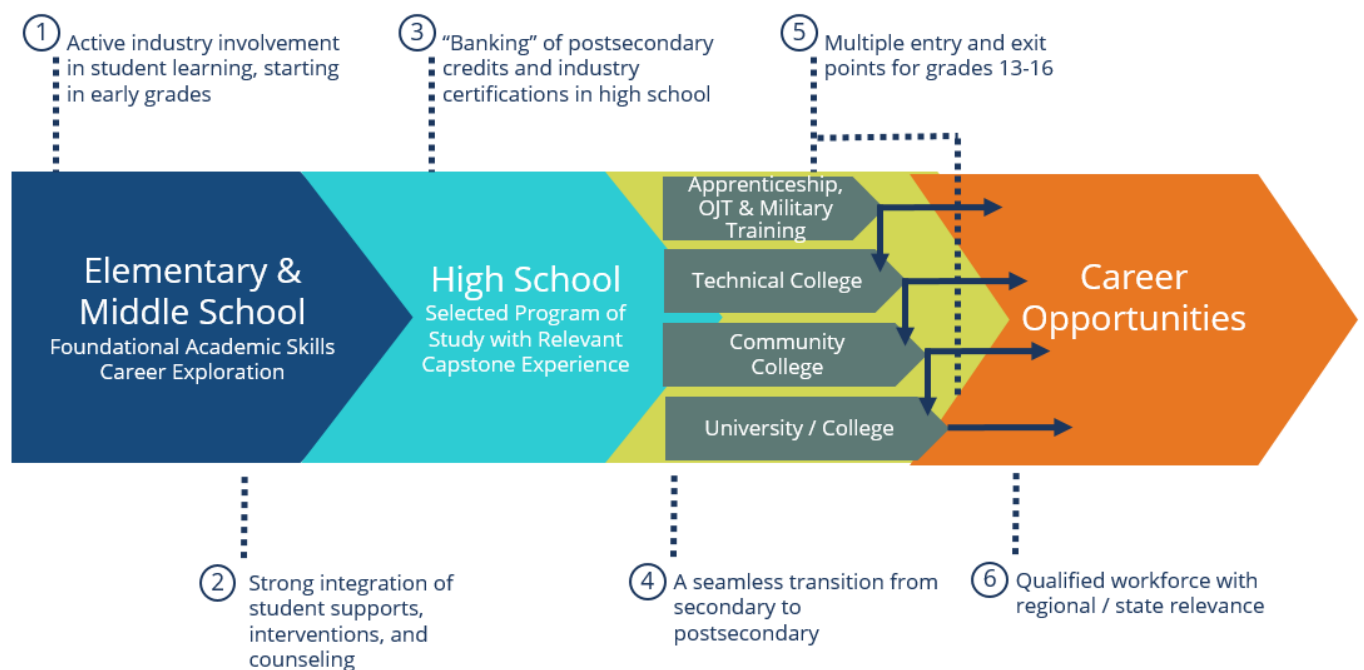
For students focusing in career and technical education (CTE) through one of the programs of study in the 16 nationally recognized career clusters that the department promotes, robust learning pathways should culminate with the achievement of nationally recognized industry certifications, capstone work-based learning experiences, and/or attainment of postsecondary credit hours through early postsecondary opportunities (EPSOs). As it pertains to industry certifications, department-promoted certifications are aligned with postsecondary and/or employment opportunities 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.

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

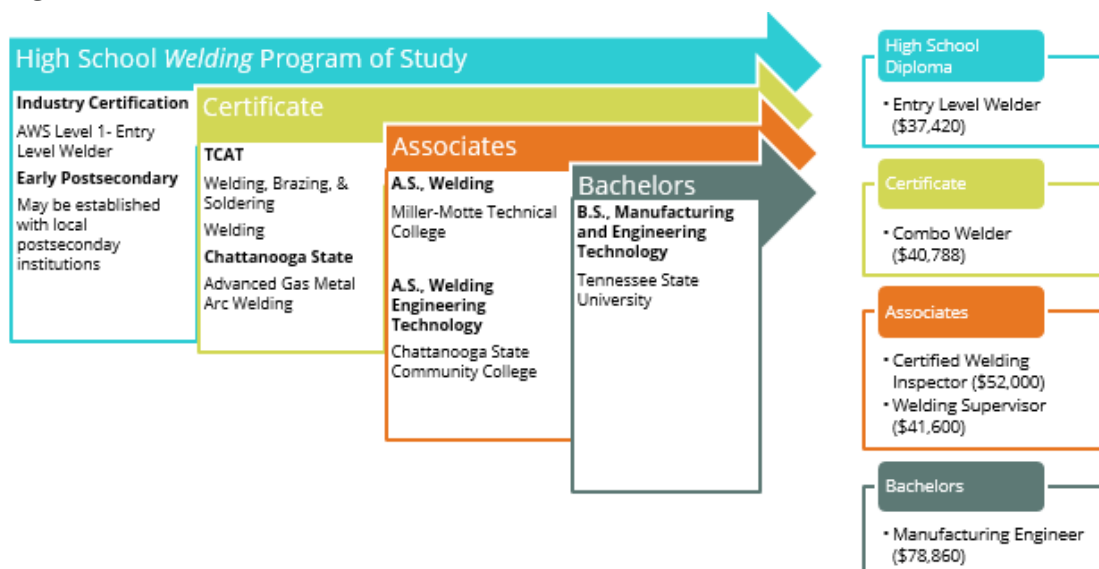
Students should be supported as they progress through their learning pathway. To ensure students are developing postsecondary and career ready skill sets, robust learning pathways should embed opportunities for students to articulate their career interests and goals through a robust career counseling 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.

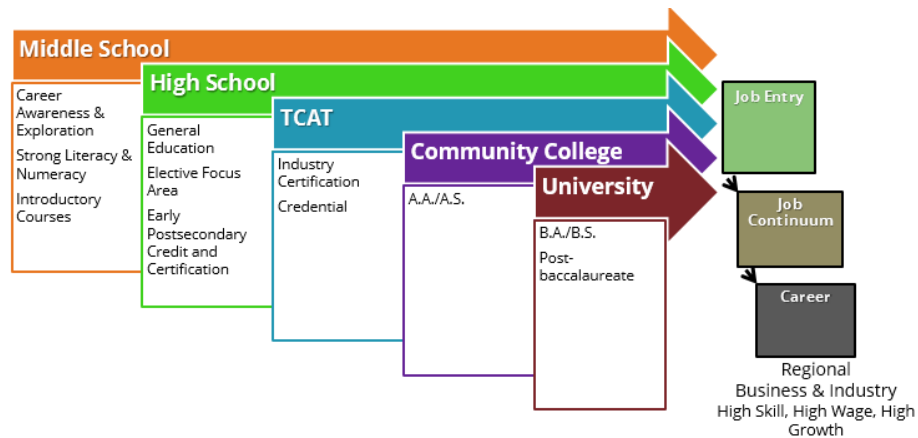
5) Multiple entry and exit points for grades 13-16

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.

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/or the workforce. Certifications should further a student's pathway not hinder it. In so keeping, the department uses the following revised criteria to determine which industry certifications to promote:

Certifications **must** be:

1. Industry recognized and valued
2. Aligned to CTE course and/or program of study
3. **And**, demonstrate **at least** one of the following:
 - a. Transference to postsecondary
 - b. Transference to high quality employment

1) Industry Recognized and Valued

For any certification to be promoted, it is essential that the certification is recognized and 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 Level 1 Siemens Certified Mechatronic Systems 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

Advanced Manufacturing

Program of Study	Level 1	Level 2	Level 3	Level 4
Mechatronics	Principles of Manufacturing (C13H05)	Digital Electronics (C13H07) -or- Robotics & Automated Systems (C13H15) -or- Project Lead the Way (PLTW) Computer Integrated Manufacturing (C13H11)	Mechatronics I ¹ (C13H16) -or- Dual Enrollment Mechatronics (C13H04)	Mechatronics II ¹ (C13H17) -or- Manufacturing Practicum (C13H08) -or- 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

1) Transference to Postsecondary

Transferability to postsecondary refers to industry certifications that are accepted for credit or hours by postsecondary institutions. 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. Postsecondary credit depends on the level of rigor of the industry certification and the postsecondary program to which it aligns.

The department partnered with the Tennessee Colleges of Applied Technology to determine the number of clock hours a student would receive for earning many of the currently promoted industry certifications. The calculation - 30 TCAT clock hours equates to one postsecondary credit hour is the same formula used to determine financial aid from TSAC.

The credit hour calculations were then rounded down to the nearest multiple of three to equate to a typical postsecondary course credit and align to what a student could receive.

Example: Student earns “ABC Industry Certification” which would be awarded 146 TCAT clock hours.

- $146 \div 30$ (postsecondary credit hour conversion) = 4.8 (rounded down to the nearest multiple of 3) = 3 credit hours or 1 postsecondary credit

This calculation was utilized to conduct an ESSA Ready Graduate indicator conversion table. Additional examples of these calculations are shown below in Figure 5.

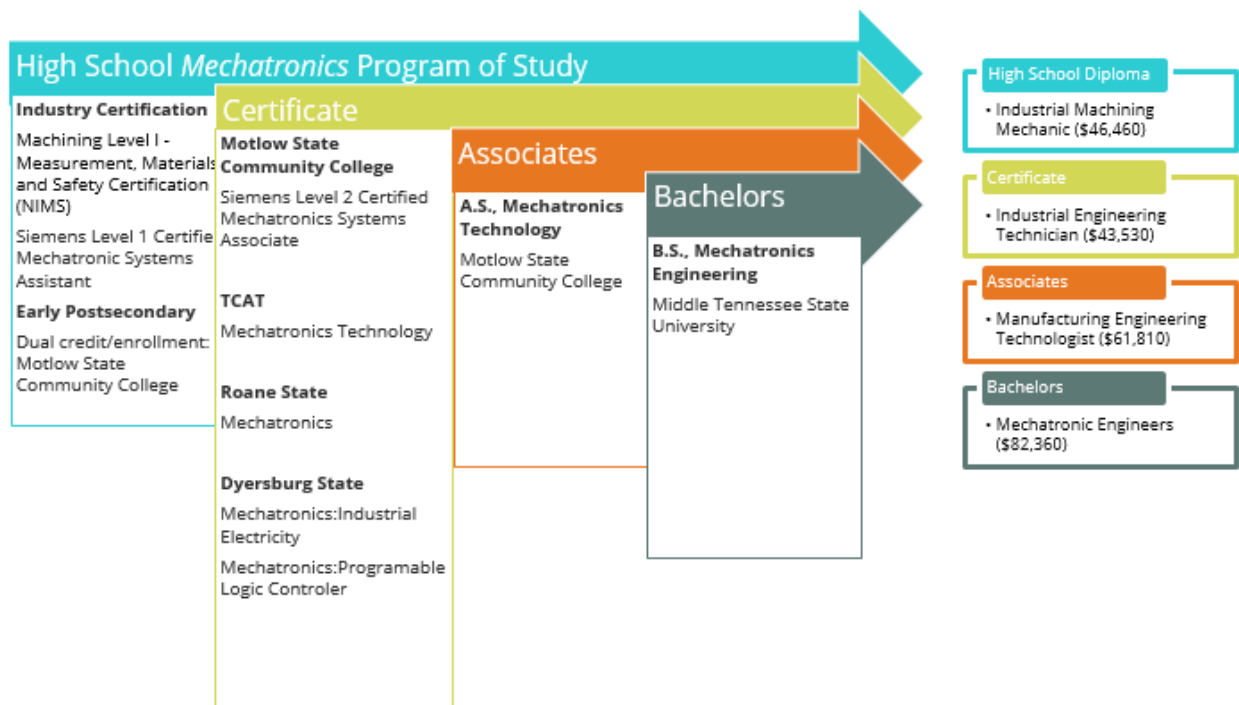
Figure 5

TCAT Program	BANNER Course Code	Total Clock Hours Awarded at TCAT	Credit hour conversion (TBRs calculation is 30 clock hours to one credit hour)	Total course credit (number of three credit courses)	TDOE ESSA Conversion
Digital Graphic Design	DGD 1040	146	3	1	Industry certification + 1 EPSO
Digital Graphic Design Technology	DGT 2010 DGT 2020 DGT 2030 DGT 3030 DGT 3030	60 60 30 30 60	6	2	Industry certification + 2 EPSO
Digital Graphic Design	DGD 3020	210	6	2	Industry certification + 2 EPSO
Welding Technology	WEL 1020	18	0	0	Industry Certification ONLY

4) Transference to High-Quality Employment

In addition to being industry valued and recognized, department-promoted industry certifications may lead to high-quality employment. For example, the attainment of a Level I Siemens Certified Mechatronic Systems Assistant certification through the Mechatronics program of study (Figure 6) allows a student to qualify for a position as an industrial engineering technician in the advanced manufacturing industry sector.

Figure 6



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. 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 for more information.