

Virginia Career and Technical Education: Manufacturing

Virginia Department of Education, Office of Career, Technical, and Adult Education



November 2016

Virginia's 16 career clusters and career assessments help students investigate careers and design their plan of study to advance their career goals. Within each career cluster, there are multiple career pathways that represent a common set of skills and knowledge, including academic, technical, and career readiness skills that lead to credentials necessary to pursue a full range of career opportunities from entry level to management, including technical and professional career specialties. CTE actively partners with business and industry to design and provide high quality, dynamic programs to meet current, emerging, and projected labor market needs. Relevant work-based learning opportunities and leadership development offered through career and technical student organizations are incorporated into the academic and career plan.

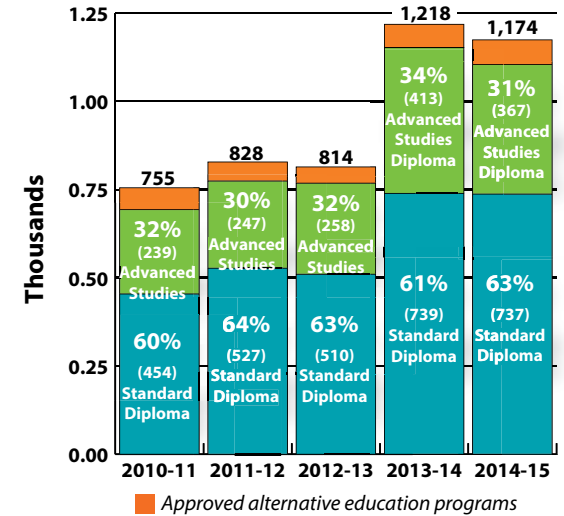
A CTE completer is a student who has met the requirements for a CTE concentration and all requirements for high school graduation, or an approved alternative education program. A concentration is a coherent sequence of state-approved courses. Students may take additional CTE courses that will enhance their career pathway goals. Completion of certain skill sets and coursework enables students to participate in Board-approved external examinations that test essential employability and technical skills. Students who earn these credentials are eligible to earn verified credit towards graduation requirements.

Beginning in 2013-2014, first time ninth grade students are required to earn a Board-approved career and technical education credential to graduate with a Standard Diploma.

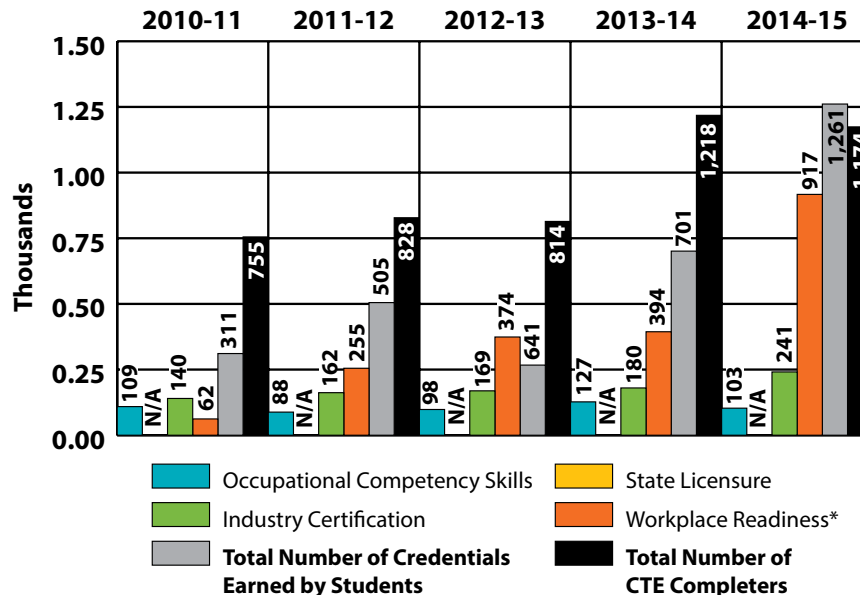
Types of Credentials

- **Full Industry Certification** - from a recognized industry, trade, or professional association;
- **Pathway Industry Certification** - specific stackable credentials from a recognized industry that lead to a full industry certification;
- **Occupational Competency Skills Assessment** - a national standardized assessment of skills/knowledge in a specific career and/or technical area;
- **State License** - required for entry into a specific occupation; and
- **Workplace Readiness Skills for the Commonwealth Certification** - for essential employability skills recognized by Virginia employers.

Completers Graduated with Standard and Advanced Studies Diplomas



Credentials Earned by CTE Students



NOTE: Completers may participate in one or more Board-approved credentialing test(s). Not all completers participate in the credentialing tests. There are age restrictions set by certain credentialing entities which would prohibit the student from testing until after high school. The cost of credentialing tests ranges from \$10 to \$300 per test.

*Prior to 2010-11, Workplace Readiness Skills assessments were included in the Industry Certification category.

Source: Virginia Department of Education

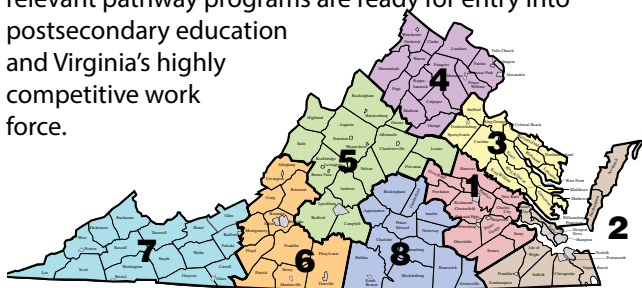
Virginia Career and Technical Education: Manufacturing

continued

The **Manufacturing Career Cluster** prepares you for careers in planning, managing, and performing the processing of materials into intermediate or final products. Careers also include related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering. Manufacturing is a large segment of the economy; companies are becoming more specialized and high-tech. Careers related to quality, logistics and safety, and environmental assurance will continue to grow as these issues gain importance to the public.

Virginia high school students learn the essential academic skills that are critical for all careers and the foundational skills needed for careers in Manufacturing. They begin to specialize in a field of interest as they complete a coherent sequence of courses within a pathway.

Secondary students who complete these rigorous and relevant pathway programs are ready for entry into postsecondary education and Virginia's highly competitive work force.



Selected Statewide Occupational Projections

Selected Occupation	2014 Median Wage ¹	2022 Projected Employment ²	Predominant Education Level ³
Maintenance and Repair Workers	\$36,770	36,047	High School & Training/certification
Production Supervisors	\$59,430	14,003	High School & Work experience
Purchasing Agents	\$71,740	12,858	Bachelor's or more & Training/certification
Team Assemblers	\$25,640	10,736	High School & Training/certification
Welders, Cutters, Solderers, and Brazers	\$41,080	9,901	High School & Training/certification & Work experience
Industrial Machinery Mechanics	\$46,520	9,685	High School & Training/certification
Inspectors, Testers, and Weighers	\$35,420	8,757	High School & Training/certification
Production, Planning, and Expediting Clerks	\$49,470	8,516	Some college/Associate Degree & Training/certification
Machinists	\$43,000	8,284	High School & Training/certification
Electrical and Electronics Engineering Technicians	\$63,640	5,458	Some college/Associate Degree
Electrical and Electronic Equipment Assemblers	\$31,240	3,584	High School
Industrial Production Managers	\$102,010	2,645	Bachelor's or more & Work experience
Mechanical Drafters	\$52,460	2,594	Some college/Associate Degree
Maintenance Workers, Machinery	\$41,780	2,529	High School & Training/certification
Cabinetmakers and Bench Carpenters	\$30,060	2,375	High School & Training/certification
Industrial Engineering Technicians	\$53,300	1,292	Some college/Associate Degree
Chemical Technicians	\$43,360	1,290	Bachelor's or more
Tool and Die Makers	\$47,510	1,052	Some college/Associate Degree & Training/certification
Electromechanical Equipment Assemblers	\$33,220	1,025	High School
Power Plant Operators	\$48,010	520	Some college/Associate Degree & Training/certification

¹ Wage data from the US Bureau of Labor Statistics Occupational Employment Statistics Program; ² Estimates from Virginia Labor Market Information, Occupational Projections (long-term) for Multiple Occupations in Virginia in 2012-2022. Retrieved via <https://data.virginialmi.com>; ³ Predominant level of education and training information created by Trailblazers, based on US BLS occupational education and training data

Source: Virginia Employment Commission, Virginia Occupational Employment Projections 2013-2022

Manufacturing 2014-2015 Enrollments**

Pathways	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8
Health, Safety, and Environmental Assurance	1,812	1,363	490	2,250	966	1,290	705	381
Logistics and Inventory Control	973	671	431	1,602	498	687	224	114
Maintenance, Installation, and Repair	711	708	219	1,604	489	934	790	381
Manufacturing Production Process Development	2,002	1,420	658	2,636	789	1,104	397	137
Production	1,162	1,041	696	1,805	683	1,105	804	404
Quality Assurance	1,651	1,100	431	1,983	772	1,091	397	130

** NOTE: Duplicated Pathway student enrollments

Source: Virginia Department of Education