



CODED CORRESPONDENCE

DATE: August 21, 2014	NUMBER: 14-08
TO: All Individuals and Groups Interested in the Activities of the Commission on Teacher Credentialing	FROM: Mary Vixie Sandy Executive Director Commission on Teacher Credentialing
SUBJECT: Approval of Amendments to Title 5 of the California Code of Regulations and Guidance Pertaining to Designated Subjects Career Technical Education Teaching Credentials	

Summary:

Amendments to Title 5, California Code of Regulations (CCR) section 80035.5 pertaining to the authorized subjects for Designated Subjects Career Technical Education (CTE) Teaching Credentials were approved by the Office of Administrative Law. This correspondence provides guidance and implementation information related to these credentials effective September 1, 2014.

Key Provisions:

The amendments to Title 5 CCR align the titles of the Industry Sectors issued on a Designated Subjects CTE Teaching Credential with those specified in the *Career Technical Education Model Curriculum Standards* adopted by the State Board of Education in January 2013.

In addition to changes to the Industry Sector titles, this correspondence addresses other revisions in the *CTE Model Curriculum Standards* (2013) that impact Commission guidance related to these credentials for future candidates, current candidates, credential holders, program sponsors, and local employing agencies. Additional changes addressed in this correspondence include:

- Career Pathways
- Occupations (formerly Specific Subjects for Vocational Education Credentials)
- Guidance for employing agencies and program sponsors for holders of Designated Subjects CTE Teaching Credentials issued both prior to and after the transition date of September 1, 2014.

Industry Sectors

Effective September 1, 2014, five of the 15 Industry Sectors listed on the Designated Subjects CTE Teaching Credential will have new titles. The new Industry Sector titles will be issued on all first



time, new type, and renewed Designated Subjects CTE Teaching Credentials on or after September 1, 2014. These changes align with the *Career Technical Education Model Curriculum Standards* (2013) and amended Title 5 section 80035.5. Table 1 contains a summary of the previous Industry Sector titles and the corresponding changes. All Industry Sectors are included in a guidance chart in *Appendix A*.

Table 1: Changes to Designated Subjects CTE Industry Sector Titles

Original Industry Sectors	Revised Industry Sectors
Building Trades and Construction	Building and Construction Trades
Energy and Utilities	Energy, Environment, and Utilities
Engineering and Design	Engineering and Architecture
Finance and Business	Business and Finance
Information Technology	Information and Communication Technologies

Career Pathways

Each Industry Sector is divided into multiple Career Pathways (Pathways). Each Pathway represents specific academic and career content standards associated with a set of Occupations within a sector. The Pathways are included in the Industry Sector Guidance Chart in *Appendix A*. The Pathways noted in the guidance chart are not listed on Designated Subjects CTE Teaching Credentials but may be commonly referenced in California public schools offering courses aligned with the *CTE Model Curriculum Standards (2013)*. Pathways were not included in previous guidance but are now provided as many high schools offer career academies that organize CTE instruction around the Career Pathways aligned to the CTE model curriculum standards. The addition of the Pathways in the guidance chart is meant to provide additional clarification for the educator, program sponsor, and employing agency.

Occupations (Formerly Specific Subjects for Vocational Education Credentials)

The most significant change for program sponsors and employing agencies is the movement of specific Occupations (formerly specific subjects) from one Industry Sector to another. The Industry Sector Guidance Chart (*Appendix A*) is provided to assist program sponsors to determine, based on a candidate’s occupational training and/or experience, the appropriate Industry Sector to list on the Designated Subjects CTE Teaching Credential.

A summary of all Occupations that moved to a new Industry Sector can be found in Table 2. A comprehensive list of all changes made in response to the 2013 *CTE Model Curriculum Standards* is available in *Appendix B*.

Table 2: Summary of Occupations Moved to a New Industry Sector

Occupation	Previous Industry Sector	Current Industry Sector
Robotics	Energy, Environment, and Utilities	Engineering and Architecture
Interior maintenance (residential and commercial)	Hospitality, Tourism, and Recreation	Building and Construction Trades
Pool and spa service	Hospitality, Tourism, and Recreation	Building and Construction Trades
Major appliance repair	Manufacturing and Product	Building and Construction Trades



Occupation	Previous Industry Sector	Current Industry Sector
	Development	as Interior Maintenance
Office machine repair	Manufacturing and Product Development	Marketing, Sales, and Service as Small Business Repair and Maintenance
Small appliance repair	Manufacturing and Product Development	Building and Construction Trades as Interior Maintenance
Barbering	Public Service	Fashion and Interior Design
Cosmetology	Public Service	Fashion and Interior Design
Manicurist and pedicurist	Public Service	Fashion and Interior Design
Motor sweeper operator	Public Service	Building and Construction Trades
Shoe repair	Public Service	Fashion and Interior Design

Effective September 1, 2014, all Commission-approved program sponsors should issue initial Preliminary Designated Subjects CTE Teaching Credentials based on the occupational guidance chart in *Appendix A*. This action and all other CTE credential recommendation types are identified in Table 3, which provides guidance for educators, program sponsors, and employers.

A Preliminary or Clear Designated Subjects CTE Teaching Credential originally issued prior to September 1, 2014 based on an occupation that moved to a new Industry Sector remains valid and appropriate for the service aligned with their occupation. For example, Barbering was previously listed under Public Service but has moved to Fashion and Interior Design. An educator holding a document initially issued before September 1, 2014 with an authorization in Public Service with experience in barbering would still hold an appropriate authorization for that occupation. Employing agencies should confirm the original issuance date of the credential and use the Crosswalk Guidance Chart in *Appendix B* and/or Table 2 to determine if an educator’s occupational experience is appropriate for their assigned Industry Sector.

The holder of a Preliminary Designated Subjects CTE Credential who completes a Clear program after September 1, 2014 has the option of keeping their original authorization or, if their occupation has moved, may transition to the new Industry Sector. Educators who elect to change Industry Sectors must work with their program sponsor to verify that the occupational training and experience held at the time the initial Preliminary CTE Credential was recommended was appropriate for the newly aligned Industry Sector. See the guidance chart in *Appendix A*. The previously issued Industry Sector authorization will be removed from their credential. Educators should confirm with their local employing agency whether any change in Industry Sector is necessary for employment purposes.

Educators whose Occupation(s) did not move to a new Industry Sector should be recommended for a Clear Designated Subjects CTE Teaching Credential in the same Industry Sector as their Preliminary Credential.

Table 3. Guidance for Recommendations

Submission Scenario	Occupation's Relation to Initial Industry Sectors	Educator's Option	Submission Guidance
First-time Preliminary CTE	Aligned with guidance chart found in Appendix A	N/A	Program sponsor submits recommendation via paper application for first-time document
Preliminary to Clear CTE	Occupation stayed in same Industry Sector	N/A	Program sponsor submits recommendation via paper application for Clear CTE in same Industry Sector listed on Preliminary
	Occupation changed to a different Industry Sector	Elects to keep original Industry Sector	
	Occupation changed to a different Industry Sector	Elects to change	Program sponsor submits recommendation via paper application for Clear CTE in new Industry Sector as aligned with guidance chart found in Appendix A once appropriate experience is verified. Previously issued authorization removed from credential
Adding an Industry Sector to a Preliminary or Clear Credential	Aligned with guidance chart found in Appendix A	N/A	Program sponsor verifies educator's work and education experience is appropriate, submits recommendation via paper application for adding an Industry Sector
Clear CTE holder needing to renew	Occupation stayed in same Industry Sector	N/A	Educator submits online renewal directly via CTC Online
	Occupation changed to a different Industry Sector	Elects to keep original Industry Sector	
	Occupation changed to a different Industry Sector	Elects to change	Program sponsor must verify appropriate occupational experience and training at time of original issuance, sponsor submits recommendation via paper application for Clear renewal in new Industry Sector, previously issued authorization removed from credential

Educators who elect not to change Industry Sectors when renewing a Clear CTE Credential can complete the renewal process through CTC Online. Those who elect to change Industry Sectors must work with a program sponsor to verify their appropriate occupational training and experience and submit their renewal via program sponsor recommendation as a paper application.

Original Issue Date

The Original Issue Date refers to the date on which the specific credential first became valid and remains static through renewals or upgrades from Preliminary to Clear. This date is displayed when using the secure lookup through the Commission’s website. Figure 1 provides an example of the Original Issue Date as displayed on the Commission’s Secure Lookup Screen.

Figure 1. Example of an Educator’s Secure Lookup Screen (Original Issue Date in lower right corner)

Document Number	Document Title	Term	Status	Issue Date	Expiration Date	Original Issue Date
██████████	Career Technical Education Teaching Credential	Clear	Valid	10/15/2013	11/1/2018	8/15/2011



Table 4 provides guidance to local employing agencies when assigning Designated Subjects CTE teaching credential holders after September 1, 2014. The local employing agency is responsible for reviewing the occupational training and experience of their CTE teachers to ensure alignment with the content of their assigned course(s). The County Office of Education monitors the assignments for holders of these credentials by verifying that the teacher holds an Industry Sector authorization aligned with the course.

Table 4. Guidance for Local Employing Agencies

Credential Status	Guidance for Local Employing Agencies
Preliminary or Clear originally issued before September 1, 2014	Verify the Industry Sector listed on the credential aligns with assignment. If not aligned, determine whether Occupations in that Industry Sector changed based on 2013 <i>CTE Model Curriculum Standards</i> . If the occupation moved to a new sector, the educator is still authorized to teach that course as well as other courses associated with the original Industry Sector (<i>Appendix B</i>). Determination of appropriate occupational training and experience for the specific course is the responsibility of the local employing agency.
Preliminary originally issued on or after September 1, 2014	Verify Industry Sector listed on credential aligns with assignment.

Important Dates:

The effective date of these changes is September 1, 2014.

Background:

Education Code section 44260.9 requires the Commission to establish a list of authorized subjects for the Designated Subjects Career Technical Education Teaching Credential. The section further states that the list shall reflect the 15 industry sectors identified in the California Career Technical Education model curriculum standards adopted by the State Board of Education. Revised *CTE Model Curriculum Standards* were adopted by the State Board of Education on January 16, 2013.

Source:

Education Code §§ 44225 and 44260.9

5 California Code of Regulation § 80035.5

References:

Designated Subjects Career Technical Education Teaching Credential (CL-888):

<http://www.ctc.ca.gov/credentials/leaflets/cl888.pdf>

Commission-Approved Professional Preparation Programs:

http://cig.ctc.ca.gov/cig/CTC_apm/DS_cte_33.php

CTE Model Curriculum Standards (2013):

<http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp>

Contact Information:

Questions concerning the Designated Subjects CTE teaching credential requirements and application process may be directed to the Commission’s Information Services staff by email at credentials@ctc.ca.gov or by telephone at 916-322-4974, Monday through Friday from 12:30 pm to 4:30 pm.

Questions concerning authorization or assignments for holders of the Designated Subjects CTE teaching credential may be directed to the Commission’s Assignment Monitoring staff by email at cawassignments@ctc.ca.gov or by telephone at 916-322-5038 (voicemail only).

Questions from Program Sponsors of Designated Subjects CTE teaching credentials may be sent to PSDInfo@ctc.ca.gov.

**CALIFORNIA CODE OF REGULATIONS
TITLE 5. EDUCATION
DIVISION 8. COMMISSION ON TEACHER CREDENTIALING**

§ 80035.5. Subject Classification System for Designated Subjects Career Technical Education Teaching Credentials.

Applicants shall obtain from Commission-approved programs of personalized preparation recommendations for designated subjects career technical education teaching credentials in one of the following Industry Sectors: Agriculture and natural resources; arts, media, and entertainment; business and finance; building and construction trades; education, child development, and family services; energy, environment, and utilities; engineering and architecture; fashion and interior design; health science and medical technology; hospitality, tourism and recreation; information and communication technologies; manufacturing and product development; marketing, sales, and service; public service; transportation.

Note: Authority cited: Section 44225, Education Code. Reference: Sections 44260, 44260.1 and 44260.9, Education Code.

Appendix A

Designated Subjects CTE Industry Sectors, Pathways, and Occupations Guidance Chart

Note: specific subjects marked with an asterisk () require a state license outside the purview of the Commission*

Industry Sectors	Pathways	Occupations
Agriculture and Natural Resources	<ul style="list-style-type: none"> • Agricultural Business • Agricultural Mechanics • Agriscience • Animal Science • Forestry and Natural Resources • Ornamental Horticulture • Plant and Soil Science 	<ul style="list-style-type: none"> • Agriculture business management and marketing • Agriculture mechanics • Animal care • Animal control • Animal production • Crop production • Floriculture and floristry • Forestry, natural resources and rural recreation • Landscaping • Ornamental nursery operation
Arts, Media, and Entertainment	<ul style="list-style-type: none"> • Design, Visual, and Media Arts • Performing Arts • Production and Managerial Arts • Game Design and Integration 	<ul style="list-style-type: none"> • Commercial art • Commercial photography • Game Design occupations • Multimedia production • Performing arts occupations • Stage technology • Theatrical occupations
Building and Construction Trades	<ul style="list-style-type: none"> • Cabinetry, Millwork, and Woodworking • Engineering and Heavy Construction • Mechanical Systems Installation and Repair • Residential and Commercial Construction 	<ul style="list-style-type: none"> • Boat building • Carpentry • Civil Engineer • Concrete placing and finishing • Construction equipment operation • Construction inspection • Drafting occupations • Drywall installation • Electrician • Fire sprinkler installation • Floor covering installation • Foundry work • Furniture making, finishing and refinishing • General contracting • Glazing • Hazardous materials occupations • Heavy Equipment Operator • Interior maintenance (residential and commercial)

Industry Sectors	Pathways	Occupations
		<ul style="list-style-type: none"> • Lathing • Masonry • Mechanical Engineer/Technician • Millwork and cabinet making • Motor sweeper operator • Painting-construction • Pipefitting and steam fitting • Plastering • Plumbing • Pool and spa service • Residential and commercial repair and remodeling • Roofing • Sheet metal fabrication • Structural and reinforcement ironwork • Structural pest control • Tile setting • Upholstering • Welding • Woodworking
Business and Finance	<ul style="list-style-type: none"> • Business Management • Financial Services • International Business 	<ul style="list-style-type: none"> • Accounting occupations • Auditor • Banking • Business Computing Specialist • Business management • Chief Financial Officer • Customs Inspector/Broker • Export Sales • Financial management and services • Human Resources Specialist • Income tax preparation • Insurance occupations • International Business • Investment Consultant • Legal office occupations • Office occupations • Personnel administration occupations • Purchasing Agent • Secretarial/stenography occupations • Tax preparation specialist • Small business ownership and/or management
Education, Child Development,	<ul style="list-style-type: none"> • Child Development • Consumer Services • Education 	<ul style="list-style-type: none"> • Child care • Child Care Psychologist • Consumer Services

Industry Sectors	Pathways	Occupations
and Family Services	<ul style="list-style-type: none"> • Family and Human Services 	<ul style="list-style-type: none"> • Counselors • Education Administrators • Elderly care services (non-medical) • Family and human service occupations • Librarian • Personal Financial Advisor • Preschool Teacher • Social Outreach Director • Teacher • Teacher aide
Energy, Environment, and Utilities	<ul style="list-style-type: none"> • Energy and Power Technology • Environmental Resources • Telecommunications 	<ul style="list-style-type: none"> • Air Quality Technician • Climatologist • Control system maintenance and repair • Electrical power distribution • Electrician • Electronic consumer products service • Electronics assembly • Energy Auditor • Energy Engineer • Energy, environment and resource manager/technician • Environmental Biologist/Scientist • Hybrid microelectronics • Hydroelectric plant operations • Industrial electronics • Marine power plant maintenance and repair • Solar occupations • Telecommunications technicians • Water treatment
Engineering and Architecture	<ul style="list-style-type: none"> • Architectural Design • Engineering Technology • Engineering Design • Environmental Engineering 	<ul style="list-style-type: none"> • Air Pollution Control Engineer • City Planner • Drafting occupations • Engineering occupations • Environmental Specialist • Field Engineer • Manufacturing Design Engineer • Mechanical/Electrical Drafting • Robotics • Structural Designer • Surveying • Architect
Fashion and Interior Design	<ul style="list-style-type: none"> • Fashion Design, and Merchandising • Interior Design, Furnishings, and 	<ul style="list-style-type: none"> • Barber • Clothing, alteration and repair • Cosmetologist*

Industry Sectors	Pathways	Occupations
	<ul style="list-style-type: none"> Maintenance • Personal Services 	<ul style="list-style-type: none"> • Esthetician* • Fabric maintenance services • Fashion Buyer • Fashion design • Fashion manufacturing (factory and custom) • Fashion merchandising • Interior Buyer • Interior design • Kitchen and Bath Specialist • Makeup Artist • Jewelry design, fabrication, and repair • Manicurist and pedicurist* • Merchandising Manager • Pattern Maker • Set Decorator • Shoe Repair • Textile design • Textile production and fabrication • Upholstering
<p>Health Science and Medical Technology</p>	<ul style="list-style-type: none"> • Biotechnology • Patient Care • Healthcare Administrative Services • Healthcare Operational Support Services • Public and Community Health • Mental and Behavioral Health 	<ul style="list-style-type: none"> • Athletic trainer • Biomedical equipment technician • Biomedical Engineer • Biomedical Research and Development Specialist • Biostatistician • Central Service Technician • Clinical Data Specialist • Clinical Lab Technologist/scientist • Clinical Simulator Technician • Clinical Trial Coordinator • Forensic Pathologist • Community Health Professional • Geneticist • Diagnostic Technician • Dental Assistant • Dental Hygienist • Dental Lab Technician • Emergency Medical Technician (EMT) • Geriatric Technician • Health Care Administrator • Health Education Specialist • Health Information Management • Insurance Coder • Technician/Technologist • Massage Therapist

Industry Sectors	Pathways	Occupations
		<ul style="list-style-type: none"> • Materials Manager • Medical/Clinical Assistant • Mental health professional • Medical Sonographer • Nutritionist/Dietician • Occupational Therapist • Optical goods work • Outreach Coordinator • Paramedic • Pharmacist • Pharmacy Technician • Phlebotomist • Physician’s Assistant • Physical Therapy Technician/Technologist • Prosthetic Technician/Technologist • Psychiatric Technician/Psychologist • Public health professional • Nurse (RN/LVN/NP) • Radiological Technician • Rehabilitation Technologist/Therapist • Respiratory Technologist/Therapist • Sports Medicine Specialist • Ultrasound Technician
<p>Hospitality, Tourism, and Recreation</p>	<ul style="list-style-type: none"> • Food Science, Dietetics, and Nutrition • Food Service and Hospitality • Hospitality, Tourism, and Recreation 	<ul style="list-style-type: none"> • Amusement and theme park occupations • Customer service representative related to amusement, theme parks, hotel and lodging, and restaurant and food service establishments • Dietetics and nutrition service • Event and conference planning • Executive Chef • Food and beverage production and preparation • Food and beverage services • Food scientist • Hotel and lodging occupations • Recreation and sports entertainment • Registered Dietitian • Restaurant Management
<p>Information and Communication Technologies</p>	<ul style="list-style-type: none"> • Information Support and Services Networking • Software and Systems Development 	<ul style="list-style-type: none"> • Big Data Administration • Computer and Information Systems • Computer Programming • Computer Sciences

Industry Sectors	Pathways	Occupations
	<ul style="list-style-type: none"> • Games and Simulation 	<ul style="list-style-type: none"> • Computer User Support • E-Business/E-Commerce • Game Production • Information Management • Information Security • Information Systems and Operations • Multimedia Production • Networking Engineer • Network Installation and Operation • Network Security Services • Network Support and Maintenance • Robotics • Social and New Media Production and Management • Software and Applications Developer • Web and Mobile Application Production
<p>Manufacturing and Product Development</p>	<ul style="list-style-type: none"> • Graphic Production Technologies • Machining and Forming Technologies • Welding and Materials Joining • Product Innovation and Design 	<ul style="list-style-type: none"> • Animator • CAD/CAM Specialist/Designer • Commercial Photographer • Commercial/Industrial Designer • Computer-assisted manufacturing • Computer Numerical Control (CNC) Operations • Cutter • Digital/Graphic Artist • Drafting occupations • Electronics assembly • Electronic publishing • Fitter • Industrial ceramics manufacturing • Machine tool operation and machine shop • Manufacturing Engineer • Metal fabrication • Material/Supply Management • Model Maker • Plastics and composites manufacturing occupations • Printing and graphics occupations • Product development, testing and demonstration • Production process/management • Quality Assurance • Robotics • Technical illustration

Industry Sectors	Pathways	Occupations
		<ul style="list-style-type: none"> • Tool and die making • Waterfront manufacturing • Welder • Welding Inspection • Welding Engineer
Marketing, Sales, and Services	<ul style="list-style-type: none"> • Marketing • Professional Sales • Entrepreneurship/Self-Employment 	<ul style="list-style-type: none"> • Advertising Representative/Manager • Business Computer Specialist • Business Owner • Fashion Buyer • Floristry • Insurance Agent/Broker • International trade • Marketing • Market Research Analyst • Office Occupations • Public Relations Specialist • Real estate • Retail occupations • Small business ownership and/or management • Small Business Repair and Maintenance • Travel Agent • Various Professional Sales Occupations
Public Service	<ul style="list-style-type: none"> • Public Safety • Emergency Response • Legal Practices 	<ul style="list-style-type: none"> • Court reporting • Cyber Security • Emergency Medical Technician • Emergency Response Dispatcher • Fire control and safety • Fire fighting • Forester • Investigator/Law Librarian • Law enforcement occupations • Legal occupations (deletion of word to expand options) • Loss Prevention Specialist • Paralegal • Protective and security services • Wildland fire services
Transportation	<ul style="list-style-type: none"> • Operations • Structural Repair and Refinishing • Systems Diagnostics and Service 	<ul style="list-style-type: none"> • Airframe and power plant mechanics • Automobile detailing • Automotive body repair and refinishing • Automotive brake installation and repair • Automotive electrical systems service

Industry Sectors	Pathways	Occupations
		<ul style="list-style-type: none"> and repair • Automotive heating and air-conditioning service • Automotive mechanics/technician • Automotive parts counterperson • Automotive suspension and steering repair • Automotive transmission and transaxle service and repair • Avionics • Bicycle repair • Claims Adjuster • Container Crane Operator • Diesel equipment mechanics • Dispatcher • Distribution Manager • Electric motor repair • Engine performance technician • Heavy equipment maintenance and repair • Industrial maintenance • Inspectors and Planners • Investigator/Inspector • Marine power plant maintenance and repair • Motorcycle service and repair • Production, Planning, and Expediting Specialist • Railroad operations • Small engine service and repair • Transportation occupations, travel services • Truck and bus driving • Warehousing

Appendix B

Crosswalk of Changes to Designated Subjects CTE Industry Sectors, Pathways, and Occupations As of September 1, 2014

This chart is intended to be a guide. Some of the subjects, such as “drafting,” can be applied to more than one Industry Sector. Commission-approved program sponsors are encouraged to examine the work experience of the individual applying for a credential and determine which Industry Sector best applies. Assignments should be considered in the same way. The most important consideration is the background and the expertise of the individual.

Pathways provide a variety of occupational focuses unique to each Industry Sector. They are established by the California Department of Education and included here for reference. Further information can be found by following the appropriate link in the References section.

Note: occupations marked with an asterisk () require a state license outside the purview of the Commission.*

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Agriculture and Natural Resources	<ul style="list-style-type: none"> • Agricultural Business • Agricultural Mechanics • Agriscience • Animal Science • Forestry and Natural Resources • Ornamental Horticulture • Plant and Soil Science 	N/A	N/A	N/A
Arts, Media, and Entertainment	<ul style="list-style-type: none"> • Design, Visual, and Media Arts • Performing Arts • Production and Managerial Arts • Game Design and Integration 	<ul style="list-style-type: none"> • Journalism occupations^{vi} 	N/A	<ul style="list-style-type: none"> • Game Design Occupations

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Building and Construction Trades	<ul style="list-style-type: none"> • Cabinetry, Millwork, and Woodworking • Engineering and Heavy Construction • Mechanical Systems Installation and Repair • Residential and Commercial Construction 	<ul style="list-style-type: none"> • Heating, air conditioning, and ventilation installation and service (HVAC): consolidated under Interior Maintenance • Refrigeration installation and maintenance: consolidated under Interior Maintenance 	N/A	<ul style="list-style-type: none"> • Civil Engineer • Heavy Equipment Operator • Interior maintenance (residential and commercial) • Mechanical Engineer/Technician • Motor sweeper operator • Pool and spa service • Woodworking
Business and Finance	<ul style="list-style-type: none"> • Business-Management • Financial Services • International Business 	N/A	N/A	<ul style="list-style-type: none"> • Auditor • Business Computing Specialist • Chief Financial Officer • Customs Inspector/Broker • Export Sales • Human Resources Specialist • International Business • Investment Consultant • Purchasing Agent • Tax preparation specialist
Education, Child Development, and Family Services	<ul style="list-style-type: none"> • Child Development • Consumer Services • Education • Family and Human Services 	<ul style="list-style-type: none"> • Interpreter for the deaf^{vi} 	N/A	<ul style="list-style-type: none"> • Child Care Psychologist • Consumer Services • Counselors • Education Administrators • Librarian • Personal Financial Advisor • Preschool Teacher • Social Outreach Director

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Energy, Environment, and Utilities	<ul style="list-style-type: none"> • Energy and Power Technology • Environmental Resources • Telecommunications 		<ul style="list-style-type: none"> • Robotics - <i>moved to Engineering and Architecture</i> 	<ul style="list-style-type: none"> • Air Quality Technician • Climatologist • Energy Auditor • Energy Engineer • Environmental Biologist/Scientist • Solar Occupations • Telecommunications Technician • Water treatment
Engineering and Architecture	<ul style="list-style-type: none"> • Architectural Design • Engineering Technology • Engineering Design • Environmental Engineering 	N/A	N/A	<ul style="list-style-type: none"> • Air Pollution Control Engineer • City Planner • Environmental Specialist • Field Engineer • Manufacturing Design Engineer • Mechanical/Electrical Drafting • Structural Designer • Architect
Fashion and Interior Design	<ul style="list-style-type: none"> • Fashion Design, and Merchandising • Interior Design, Furnishings, and Maintenance • Personal Services 	<ul style="list-style-type: none"> • Jewelry design, fabrication, and repair^{vi} 	N/A	<ul style="list-style-type: none"> • Fashion Buyer • Merchandising Manager • Pattern Maker • Set Decorator

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Health Science and Medical Technology	<ul style="list-style-type: none"> • Biotechnology • Patient Care • Healthcare Administrative Services • Healthcare Operational Support Services • Public and Community Health • Mental and Behavioral Health 	<ul style="list-style-type: none"> • Dental services: replaced with more specific occupations Dental Assistant, Dental Hygienist, and Dental Lab Technician • Health care biotechnology services: replaced by more specific occupations including Biomedical Engineer and Biomedical Research and Development Specialist • Health care diagnostic services: replaced by more specific occupations including Clinical Lab Technician, Clinical Simulator Technician, Radiological Technician, and Ultrasound Technician • Health care information services: replaced by more specific occupations including Health Care Administrator and insurance coder • Health care preventive services: replaced by more specific occupations including: Health Education Specialist, Public Health 	N/A	<ul style="list-style-type: none"> • Biomedical Engineer • Biomedical Research and Development Specialist • Biostatistician • Central Service Technician • Clinical Data Specialist • Clinical Lab Technologist/scientist • Clinical Simulator Technician • Clinical Trials Coordinator • Forensic Pathologist • Community Health Professional • Geneticist • Diagnostic Technician • Dental Assistant • Dental Hygienist • Dental Lab Technician • Geriatric Technician • Health Care Administrator • Health Education Specialist • Technician/Technologist • Massage Therapist • Materials Manager • Medical/Clinical Assistant • Mental health professional • Medical Sonographer • Nutritionist/Dietician • Outreach Coordinator • Phlebotomist • Physician’s Assistant

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
		<ul style="list-style-type: none"> Professional, and Mental Health Professional • Health care supportive services: replaced by more specific occupations including Materials Manager and Nutritionist/Dietician • Medical office services: replaced by more specific occupations including Medical/Clinical Assistant • Licensed Vocational Nurse: renamed Nurse (RN/LVN/NP) • Nursing services: renamed Nurse (RN/LVN/NP) • Therapeutic services: replaced by more specific occupations including Sports Medicine Specialist, Physician’s Assistant, Pharmacy Technician, and Pharmacist 		<ul style="list-style-type: none"> • Physical Therapy Technician/Technologist • Prosthetic Technician/Technologist • Psychiatric Technician/Psychologist • Public health professional • Nurse (RN/LVN/NP) • Radiological Technician • Rehabilitation Technologist/Therapist • Respiratory Technologist/Therapist • Sports Medicine Specialist • Ultrasound Technician
Hospitality, Tourism, and Recreation	<ul style="list-style-type: none"> • Food Science, Dietetics, and Nutrition • Food Service and Hospitality • Hospitality, Tourism, and Recreation 	<ul style="list-style-type: none"> • Commercial diving^{vi} • Custodial services^{vi} 	<ul style="list-style-type: none"> • Interior maintenance (residential and commercial) - <i>Moved to Building and Construction Trades</i> • Pool and spa service - <i>Moved to Building and Construction Trades</i> 	<ul style="list-style-type: none"> • Executive Chef • Food scientist • Registered Dietitian • Restaurant Management

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Information and Communication Technology	<ul style="list-style-type: none"> • Information Support and Services Networking • Software and Systems Development • Games and Simulation 	<ul style="list-style-type: none"> • Communications Electronics^{vi} • Computer Applications^{vi} • Computer Electronics^{vi} • Computer Maintenance and Repair : renamed Computer User Support • Computer Software Operation: Renamed Computer and Information Systems • Computer Systems Operation: Renamed Computer and Information Systems • Information Processing: renamed Information Management • Information Systems Management: renamed Information systems and Operations • Telecommunications: renamed Web and Mobile Application Production 	N/A	<ul style="list-style-type: none"> • Big Data Administration • Computer and Information Systems • Computer Sciences • Computer User Support • E-Business/E-Commerce • Game Production • Information Management • Information Security • Information Systems and Operations • Multimedia Production • Networking Engineer • Network Installation and Operation • Network Support and Maintenance • Robotics • Social and New Media Production and Management • Software and Applications Developer • Web and Mobile Application Production

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
Manufacturing and Product Development	<ul style="list-style-type: none"> • Graphic Production Technologies • Machining and Forming Technologies • Welding and Materials Joining • Product Innovation and Design 	<ul style="list-style-type: none"> • Instrument repair^{vi} 	<ul style="list-style-type: none"> • Major appliance repair - <i>Moved to Building and Construction Trades as Interior Maintenance</i> • Office machine repair— <i>Moved to Marketing, Sales, and Service as Small Business Repair and Maintenance</i> • Small appliance repair - <i>Moved to Building and Construction Trades as Interior Maintenance</i> 	<ul style="list-style-type: none"> • Animator • CAD/CAM Specialist/Designer • Commercial Photographer • Commercial/Industrial Designer • Computer Numerical Control (CNC) Operations • Cutter • Digital/Graphic Artist • Electronics assembly • Fitter • Manufacturing Engineer • Material/Supply Management • Model Maker • Production process/management • Quality Assurance • Welder • Welding Inspection • Welding Engineer
Marketing, Sales, and Services	<ul style="list-style-type: none"> • Marketing • Professional Sales • Entrepreneurship/Self-Employment 	N/A	N/A	<ul style="list-style-type: none"> • Advertising Representative and Manager • Business Computer Specialist • Business Owner • Fashion Buyer • Floristry • Insurance Agent/Broker • Market Research Analyst • Office Occupations

Industry Sector ⁱ	Pathways ⁱⁱ	Occupations ⁱⁱⁱ		
		Removed ^{iv}	Moved	New ^v
				<ul style="list-style-type: none"> • Public Relations Specialist • Small Business Repair and Maintenance • Travel Agent • Various Professional Sales Occupations
Public Service	<ul style="list-style-type: none"> • Public Safety • Emergency Response • Legal Practices 	<ul style="list-style-type: none"> • Locksmith and safe repair^{vi} • Military services: removed as most jobs in the military are also found in civilian occupations which are covered in the 15 industry sectors and 58 pathways 	<ul style="list-style-type: none"> • Barbering - <i>Moved to Fashion and Interior Design</i> • Cosmetology - <i>Moved to Fashion and Interior Design</i> • Manicures and pedicures - <i>Moved to Fashion and Interior Design</i> • Motor sweeper operator - <i>Moved to Building and Construction Trades</i> • Shoe repair - <i>Moved to Fashion and Interior Design</i> 	<ul style="list-style-type: none"> • Cyber Security • Emergency Response Dispatcher • Forester • Investigator/Law Librarian • Loss Prevention Specialist • Paralegal • Wildland fire services
Transportation	<ul style="list-style-type: none"> • Operations • Structural Repair and Refinishing • Systems Diagnostics and Service 	<ul style="list-style-type: none"> • Tow truck operation^{vi} 	N/A	<ul style="list-style-type: none"> • Claims Adjuster • Container Crane Operator • Dispatcher • Distribution Manager • Marine power plant maintenance and repair • Motorcycle service and repair • Production, Planning, and Expediting Specialist

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- ⁱ The Industry Sector titles are shown on CTE credentials as authorizations.
 - ⁱⁱ Pathways provide a variety of occupational focuses unique to each Industry Sector. The Pathways are established in the CTE Model Curriculum Standards (2013) and included here for guidance only.
 - ⁱⁱⁱ This chart is intended to be a guide. Some of the Occupations, such as “drafting,” can be applied to more than one Industry Sector. Commission-approved program sponsors are encouraged to examine the work experience of the individual applying for a credential and determine which Industry Sector best applies. Assignments should be considered in the same way. The most important consideration is the background and the expertise of the individual.
 - ^{iv} Removed Occupations may have been removed entirely, replaced by more specific occupations in the same industry sector, or collapsed within a broader heading in the existing Industry Sector.
 - ^v Occupations in this column (New) are new to the 2013 Career Technical Model Curriculum Standards.
 - ^{vi} This occupation is no longer supported in the 2013 Career Technical Model Curriculum Standards and may not qualify for Perkins funding.