

Attachment A

APPRENTICESHIP PLUS TRAINING OPTION DESCRIPTIONS

1. REGISTERED APPRENTICESHIP

- Earn and learn education model that is registered with the U.S. DOL
- May be time-based, competency-based, or a hybrid, usually lasting between 1-6 years
- Apprentices receive stipend or wages, engaged with an employer from day one
- Structured-on-the-job training guided by an experienced mentor or journeyman
- Related instruction
 - Provided by community college, training provider/center, technical schools, or in-house training
 - May be in person or computer-based distance learning
 - May be at the beginning, end, or throughout the program
 - Instruction piece paid for by apprentice, employer, other entity/agency, or a combination
 - Apprentice may or may not be paid for time spent “in class”
 - May provide apprentices with the opportunity to obtain post-secondary degrees
- Rewards for skill gains, incremental wage increases as they become proficient on the job
- Industry recognized credentials and a DOL certificate of completion

Registered Apprenticeship	
Characteristic	Evidence
1. Business Involvement	Business employs participants. Participants are newly hired (or already employed) and earn wages from employers during training.
2. Structured-on-the-Job Training	On-the-job learning is conducted in the work setting under the direction of one or more of the employer’s personnel, aka journeymen.
3. Related Instruction	Classroom instruction is provided by apprenticeship training centers, technical schools, community colleges, distance learning, or onsite providers. Apprentice may or may not be paid for time spent “in class”. Often Registered Apprenticeship sponsors work directly with community colleges that ultimately provide college credit for apprentice.
4. Rewards for Skills Gains	Apprentices receive increases in wages as they gain higher level skills.
5. Industry Recognized Credential	The apprentice earns a nationally recognized credential from the Department of Labor that is portable and stackable.

2. INDUSTRY RECOGNIZED CREDENTIALS AND TRAINING

- Robust earn and learn education model, providing authentic career pathways
- One-off customized workforce training should not be included in this.
- The apprentice is not preparing for a job; s/he is preparing for a career.
- Due to employer needs, usually competency-based, lasting between 1-6 years
- Apprentices receive wages, engaged with an employer from day one
- Hands on competency attainment through structured-on-the-job training guided by an experienced mentor or journeyman
- Relevant related instruction
 - Training curriculum is developed or adapted to meet the education and training needs of the specific employer(s)
 - Provided by community college, training provider/center, technical schools, or in-house training
 - May be in person or computer-based distance learning
 - May be at the beginning, end, or enduring throughout the program
 - Instruction piece paid for by apprentice, employer, other entity/agency, or a combination
 - Apprentice may or may not be paid for time spent “in class”
 - May provide apprentices with the opportunity to obtain post-secondary degrees
- As apprentice advances in the career track, there is advancement in pay structure; incremental wage increases as they become proficient on the job
- Industry recognized credentials

Industry Recognized Credentials and Training	
Characteristic	Evidence
1. Business Involvement	Business employs participants. Participants are newly hired (or already employed) earn wages from employers during training.
2. Structured-on-the-Job Training	On-the-job learning is conducted in the work setting under the direction of one or more of the employer’s personnel, aka mentor or journeyman.
3. Related Instruction	Classroom instruction is provided by apprenticeship training centers, technical schools, community colleges, distance learning, or onsite providers. Apprentice may be paid for time spent “in class”.
4. Rewards for Skills Gains	Apprentices receive increases in wages as they gain higher level skills.
5. Industry Recognized Credential	The apprentice earns industry recognized credential(s).

3. PRE-APPRENTICESHIP

- Prior to hire education model, a robust and holistic program focused on a career path and work readiness
 - Provide foundation, building blocks, baseline skill sets for participants to be as prepared as possible
 - Industry specific and provides information regarding apprenticeship programs
 - Improve reading, writing, and/or math skills necessary to qualify for an apprenticeship program
 - Offer classroom instruction and technical training, which teaches basic technical and job readiness skills and guides a student towards employment
 - Instruction piece may be paid for by the apprentice, other entity/agency, or a combination
 - Many be a boot camp for work readiness with support services.
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- Program length is dependent on program objectives and skills to be acquired
- Placement of participants into a Registered Apprenticeship, a Youth Apprenticeship, or a Customized Employer-Based Training program is the core goal
 - At a minimum, the program should provide enough competency in an industry sector where the participant can be employed in an entry-level career path position.
- Relevant industry recognized credentials
 - Depending on the industry, there are basic credentials participants can earn before completion

Pre-Apprenticeship	
Characteristic	Evidence
1. Business Involvement	<ul style="list-style-type: none"> • Typically, pre-employment, upfront classroom instruction without pay (some can receive state-funded financial aid).
2. Structured-on-the-Job Training	Pre-apprenticeship programs concentrate on classroom experiences related to job-readiness skills but may include exposure to the work setting through visits, job shadowing, etc.
3. Related Instruction	<ul style="list-style-type: none"> • Benefit from classroom and technology-based training • Can include literacy, math, English, and work-readiness skills employers desire • Training and curriculum based on industry standards • Some approved by the documented Registered

	Apprenticeship partner(s) and prepare individuals with the skills and competencies needed to enter one or more Registered Apprenticeships
4. Rewards for Skills Gains	Completers can transition to a job where they can pursue an apprenticeship or other gainful employment.
5. Industry Recognized Credential	Pre-apprentices earn industry recognized credentials such as NIMS, OSHA, or other industry credentials.

4. YOUTH APPRENTICESHIP

- A work-based learning education model, targeted to youth, ages 16-24, divided into two different categories
 - In-school youth
 - Out-of-school youth
 - The age range indicates level of “support” needed during this time to guide/counsel towards career pathways
- While types of work experiences can vary, a youth apprenticeship program is largely distinguished from a pre-apprenticeship program by its depth of work experience.
 - 'Work-based learning' means sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, first-hand engagement with the tasks required of a given career field, that are aligned to curriculum and instruction
 - Employer commitment and involvement are key, through the provision of exposure, work experience, and/or mentoring, as well as wages in some instances.
 - For out-of-school youth, most likely need bundled support services – financial readiness, academics, supportive services (identify resources for them)
- Provides academic and technical classroom instruction combined with job related learning experiences
 - Classroom and work-based learning are highly structured and strongly related
 - Academic programs of study generally combine 11th & 12th grade with post-secondary classes
 - All credentials should be industry-recognized
- Have skill standards or competencies to be mastered and the means to evaluate that mastery
- Broader exposure - exposed to many aspects of the industry at the participating business to set youth up for understanding which roles may be a best fit.
 - Obtain a set of well-defined industry sector abilities by learning concepts in the classroom and applications in a work setting

- Partnership structure can involve secondary schools, post-secondary institutions, employers, workforce development agencies, private training partners, and/or community-based organizations
- Out of-school-youth apprenticeship vs. in-school youth apprenticeship
 - The two different populations have *similar* needs in that they are young and inexperienced in the workplace. However, they have *different* needs in other areas, e.g. barrier removal, social capital, academic accomplishment, integration of support services, etc.
 - The youth apprenticeship program is about closing opportunity gaps, providing connections and networking opportunities, having more options overall open up to the young person.
- Strongly suggest that these positions pay, particularly if the young person performs services. Usually wages are the difference between pre-apprenticeship and youth apprenticeship
- “Soft” skills or “Common Employability” skills should be encouraged in all programs; AHIMA has created modules available for anyone to use.
- Industry competencies should be standardized across the state to evaluate that mastery.
- Youth apprenticeship programs require far more integration of assorted pieces than other types of apprenticeships:
 - Integration of work experience and work-site learning
 - Work-site learning - measurable competency attainment
 - Work experience – Value of having a job! Shear value of having a job, activities that go along with that
 - Integration of academic and career-technical learning in school
 - Integration of school and work-based learning
 - Integration and clear articulation of secondary and post-secondary school programs
 - Integration and coordination of broad coalitions of employers and partners

Youth Apprenticeship	
Characteristic	Evidence
1. Business Involvement	Experiences range from short-term, unpaid job shadowing to paid part-time employment. Students average as little as 10 hours per week at the work-based learning site to 30 hours per week. When salaries are provided, the youth apprentice earns minimum wage or higher.
2. Structured-on-the-Job Training	Work-based learning includes the development of a detailed training plan between the employer and apprentice; identification of specific work tasks that will develop workplace competencies; a specified minimum of on-the-job training; workplace mentoring; and instruction in general workplace competencies as well

	as all aspects of a chosen industry.
3. Related Instruction	School based academic instruction continues along with related technical coursework, which may be provided by the school, a community college, or other provider.
4. Rewards for Skills Gains	Depending on the agreement with participating employers, students may receive wage increases as skills are gained.
5. Industry Recognized Credential	Youth Apprentices earn industry recognized credentials such as NIMS, OSHA, or other industry credentials.

Attachment B
 Illinois' Apprenticeship Plus System – Comparison of Program Components

ATTACHMENT B

Feature	Registered Apprenticeship (RA)	Non-Registered Apprenticeship Industry Recognized Credential Program	Youth Apprenticeship (YA)	Pre-Apprenticeship
Target Participant	All, ages 16 and up	All, ages 16 and up	High school or out-of-school youth	All, ages 16 and up, including youth in high school
Business Involvement	Business employs participants as new hires (if not already employed). If wages are offered they are paid by the employer during training.		Experiences vary and usually provide paid part-time employment. Hours at the work site range from 1–30 hours/week. Businesses usually provide broad, general exposure to an occupation or group of related occupations.	Typically, pre-employment, upfront classroom instruction without pay.
Structured On-the-Job Training	On-the-job learning is conducted in the work setting under the direction of one or more of the employer's personnel, aka mentor or journeyman.		Work-based learning is guided by a detailed training plan. Work tasks are connected to specific workplace competencies in the training plan; a specified minimum of on-the-job training with workplace mentoring.	Pre-apprenticeship programs concentrate on classroom experiences related to job-readiness skills but may include exposure to the work setting through visits, job shadowing, etc.
Related Instruction	Classroom instruction is provided by apprenticeship training centers, technical schools, community colleges, distance learning, or onsite providers. Apprentice may be paid for time spent "in class". May work directly with a community college that provides college credit for apprentices that meet the college entrance requirements.		School based academic instruction continues along with related technical coursework provided by the school, a community college, or other educational partner. May work directly with a community college that provides college credit for apprentices that meet the college entrance requirements.	Classroom and technology-based training. May include literacy, math, English, and work-readiness skills. Must have a written agreement with at least one RA or non-Registered Apprenticeship program that successful completers are eligible for admission to that program.
Rewards for Skill Gains	Apprentices receive increases in wages as they gain higher level skills.		Depending on the agreement with participating employers, students may receive wage increases as skills are gained.	Completers can transition to a job where they can pursue a RA or other paid work.
Industry-Recognized	The apprentice earns a nationally recognized	The apprentice earns industry recognized credential(s).	Youth Apprentices earn industry-recognized credentials such as NIMS, OSHA, etc.	Pre-apprentices earn industry-recognized credentials such as

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Feature	Registered Apprenticeship (RA)	Non-Registered Apprenticeship Industry Recognized Credential Program	Youth Apprenticeship (YA)	Pre-Apprenticeship
Credential	credential from the U.S. Department of Labor that is portable and potentially stackable.			NIMS, OSHA, if available at this level of education, etc.
Considerations	<ul style="list-style-type: none"> • May be eligible for WIOA funds or other state or federal funded financial aid. • New RA programs should emphasize mastery of defined competencies over hours or years spent in program. • The apprentice is not preparing for a career rather than a specific job. 	<ul style="list-style-type: none"> • May be eligible for WIOA funds of other state or federal financial aid. • The apprentice is preparing for a career rather than a specific job. 	<ul style="list-style-type: none"> • May be eligible for WIOA funds or other state or federal funded financial aid. • Upon completion, the youth is eligible to apply for entry in a Registered or non-registered apprenticeship program, postsecondary school, or full-time employment. • Differ from internships in that they provide credentials, OJT with mentor, structured related training, defined competencies that must be demonstrated, etc. • 'Work-based learning' means sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, first-hand engagement with some of the tasks required of a given career field, that are aligned to curriculum and instruction. • Employer commitment and involvement are key, through the provision of exposure to the workplace, work experience, and/or mentoring, as well as wages in some instances. • Relationships with high schools and post-secondary institutions are key in order to receive credit from a high school or college for time spent in the classroom. While receiving course credit is 	<ul style="list-style-type: none"> • May be eligible for WIOA funds or other state or federal funded financial aid. • Many pre-apprenticeship programs are much like a boot camp for work readiness with support services. • Out-of-school youth most likely will need bundled support services (e.g. financial literacy, basic skills building, supportive services).

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Illinois' Apprenticeship Plus System – Comparison of Program Components

Feature	Registered Apprenticeship (RA)	Non-Registered Apprenticeship Industry Recognized Credential Program	Youth Apprenticeship (YA)	Pre-Apprenticeship
			<p>not necessary for YA it can help with motivation and retention.</p> <ul style="list-style-type: none"> • Could be used to bring disconnected youth into a skill building pathway and help those without a high school diploma earn a GED or HS diploma while earning money. • Out-of-school youth most likely will need bundled support services (e.g. financial literacy, basic skills building, supportive services). 	



Making ApprenticeshipUSA Work for the Public Workforce System: USING WORKFORCE FUNDS TO SUPPORT APPRENTICESHIP

ApprenticeshipUSA is an employer-driven training model that combines on-the-job training with job-related instruction. This “earn and learn” approach helps workers start new careers and helps businesses recruit and retain a highly-skilled workforce. Businesses can hire new workers or select current employees to join apprenticeship programs. The Workforce Innovation and Opportunity Act (WIOA) advances the use of apprenticeship as an effective work-based learning approach that builds worker skills and establishes pathways to higher levels of employment and wages. WIOA funds can be used in a variety of ways to help job seekers and workers prepare for, enter, and complete apprenticeship programs.

While ApprenticeshipUSA is the term for the overall model, the term Registered Apprenticeship reflects the fact that a business has chosen to register its program with the U.S. Department of Labor or a State Apprenticeship Agency. Registering an apprenticeship program provides a number of benefits, such as a national credential for apprentices and potential state tax credits for businesses.

WIOA programs can support the on-the-job training component of apprenticeship programs. WIOA funds can also pay for the cost of related classroom instruction for the apprentice, including tuition, books, supplies, fees, uniforms, tools and other required items. Customized training and incumbent worker training are other ways that WIOA funds can support businesses that sponsor apprenticeship programs.

Basic skills training and pre-apprenticeship programs can be provided under WIOA to prepare participants to enter apprenticeship programs. WIOA youth services for tutoring, mentoring, and work experience can be used in combination with pre-apprenticeship and apprenticeship programs.

This quick reference guide is a resource for local workforce professionals who are interested in using apprenticeship as an employment and training strategy in WIOA programs.

Note that in all instances, a participant’s eligibility for WIOA must be properly established and documented prior to the commitment of funds for Registered Apprenticeship programs.

WIOA Adult and Dislocated Worker Programs: Use of Funds for Registered Apprenticeship Programs

WIOA SERVICE	SUPPORT FOR APPRENTICESHIP
ASSESSMENT, CAREER PLANNING, AND CASE MANAGEMENT	<ul style="list-style-type: none"> • Assessment and career planning can help to identify if a WIOA participant is a good fit for an apprenticeship program. • Through case management, local workforce professionals can identify the service strategies and supports necessary to overcome any barriers to entry and completion of an apprenticeship program.
BASIC SKILLS PREPARATION	<ul style="list-style-type: none"> • Pre-vocational services, language skills, and job readiness may be provided under WIOA to prepare participants to enter apprenticeship programs.
PRE-APPRENTICESHIP	<ul style="list-style-type: none"> • WIOA funds can be used to fund pre-apprenticeship programs that provide basic skills, work experiences, and other support to help participants obtain the skills needed to be placed into an apprenticeship.
TRAINING AND EDUCATION	<ul style="list-style-type: none"> • Individual Training Accounts (ITAs) can be used to fund the related classroom instruction component of an apprenticeship program, as long as the apprenticeship program or the education/training provider for the apprenticeship program is on the Eligible Training Provider List (ETPL). Under WIOA, all Registered Apprenticeship program sponsors are automatically eligible to be placed on the ETPL. • WIOA participants can use ITA funds to pay for the cost of tuition, as well as fees, books, equipment, and other training-related costs (consistent with the policies for ITAs established by the local workforce board). • ITA funds can be used in combination with on-the-job training funds to support WIOA participants in apprenticeship.
ON-THE-JOB TRAINING	<ul style="list-style-type: none"> • Under WIOA, on-the-job training (OJT) contracts may be established with employers to support the OJT component of Registered Apprenticeship programs. • While employer OJT reimbursement rates were 50% under the Workforce Investment Act, Governors and local boards may choose to provide reimbursement to employers of costs up to 75% of apprentice wage rates under WIOA. • OJT may be used with both job seekers and current (incumbent) workers already employed by the business.

CUSTOMIZED TRAINING

- WIOA funds can be used for customized training with the employer paying for a significant portion of the cost of the training, as determined by the local workforce board.
- Customized training can be used to support apprenticeship programs by meeting the special requirements of an employer or a group of employers.
- Customized training may be used for both job seekers and current (incumbent) employees.

INCUMBENT WORKER TRAINING

- Under WIOA, local areas may use up to 20% of their adult and dislocated worker funds, and states may use their statewide activities and rapid response funds, for incumbent worker training. Employers pay a portion of the cost.
- Apprenticeships are a good way to up-skill entry-level employees, retain them, and provide workers with an upward career path. Therefore, incumbent worker training is an effective strategy to support apprenticeship programs.

SUPPORTIVE SERVICES

- To the extent that WIOA funds are available for supportive services, these services, such as transportation or child care, may be used to help WIOA participants who are preparing for apprenticeship programs. They may also help participants once they are enrolled in apprenticeship programs, to ensure retention and full participation in the related classroom instruction.
- Supportive services would most commonly be provided during pre-apprenticeship or at the beginning of an apprenticeship program. Once the apprentice is on the job, he or she will earn a wage and receive incremental wage increases throughout the apprenticeship, reducing the need for supportive services.

FOLLOW-UP SERVICES

- As with all WIOA services, local workforce professionals may provide follow-up services to participants in apprenticeship programs to help ensure successful completion.

WIOA Youth Program: Use of Funds for Registered Apprenticeship Programs

WIOA SERVICE	SUPPORT FOR APPRENTICESHIP
ASSESSMENT AND CASE MANAGEMENT	<ul style="list-style-type: none"> Through objective assessment and case management, local workforce professionals can determine if a pre-apprenticeship or apprenticeship program is an appropriate service strategy for a youth participant.
PRE-APPRENTICESHIP	<ul style="list-style-type: none"> Pre-apprenticeship is an identified program element for WIOA youth programs. Pre-apprenticeship programs can include basic skills, integrated instructional models, and other activities designed to prepare youth participants to enter and succeed in apprenticeship programs.
TRAINING AND EDUCATION	<ul style="list-style-type: none"> As part of occupational skills training, WIOA funds can be used to pay for the costs of the related classroom instruction component of apprenticeship programs through Individual Training Accounts (ITAs) for out-of-school youth aged 18-24.
TUTORING	<ul style="list-style-type: none"> Tutoring services can be used in combination with apprenticeship to help youth participants succeed, particularly during pre-apprenticeship or related classroom instruction.
MENTORING	<ul style="list-style-type: none"> Employers sponsoring Registered Apprenticeship programs can mentor WIOA-eligible youth hired as apprentices.
WORK EXPERIENCE	<ul style="list-style-type: none"> Under WIOA, local areas must spend a minimum of 20% of their youth program funds on work experience. On-the-job training can be supported with WIOA youth program funds and can be utilized to support youth participants in apprenticeship programs.
SUPPORTIVE SERVICES	<ul style="list-style-type: none"> To the extent that WIOA funds are available for supportive services, these services, such as transportation, may be used to help WIOA youth participants succeed in apprenticeship training. Supportive services would most commonly be provided during pre-apprenticeship or at the beginning of an apprenticeship program. Once the apprentice is on the job, he or she will earn a wage and receive incremental wage increases throughout the apprenticeship, reducing the need for supportive services.
FOLLOW-UP	<ul style="list-style-type: none"> The 12-month follow-up period in the WIOA youth program can help to ensure participants continue to advance in, and graduate from, their apprenticeship programs.

Additional Federal Resources to Support Apprenticeship

In addition to WIOA, several other federal programs can be leveraged to support Registered Apprenticeship programs. For example:

- Apprentices may be eligible for Federal Financial Aid under certain circumstances. If the apprenticeship is connected to a post-secondary institution, apprentices may be eligible for Pell Grants - \$3,000 on average per apprentice to support tuition, books and lab fees. Also, the post-secondary institution may choose to provide federal work-study grants, which average \$2,000 per apprentice.
- By becoming approved for the GI Bill, Registered Apprenticeship programs can assist current and future Veteran apprentices in accessing the benefits they have earned. Veterans who qualify for the GI Bill can receive a tax-free monthly stipend (paid by the U.S. Department of Veteran Affairs), in addition to the wages they receive in an apprenticeship. Veterans also receive tuition and fee payments for classroom instruction. Registered Apprenticeship program sponsors can be certified under the GI Bill usually within 30 days.

Using multiple funding sources can help to offset the costs of apprenticeship for both employers and WIOA participants. For additional information on federal resources that can support apprenticeship programs, please visit the “Federal Resources Playbook for Registered Apprenticeship” available at <http://www.doleta.gov/oa/federalresources/playbook.pdf>.

For more information on Registered Apprenticeship programs and how the workforce system can use apprenticeship as an effective workforce strategy, visit the ApprenticeshipUSA toolkit at www.dol.gov/apprenticeship/toolkit/index.htm.

Attachment D
 Bureau of Labor Statistics "Bright Outlook" Occupations

BUREAU OF LABOR STATISTICS "BRIGHT OUTLOOK" OCCUPATIONS*	
*Bright Outlook occupations are expected to grow rapidly in the next several years, will have large numbers of new job openings, or are new and emerging occupations.	
Occupations that are currently "apprenticeable" according to the US Dept. of Labor	
Occupations that are not currently "apprenticeable" according to the US Dept. of Labor, generally do require some post-secondary education or training, but generally do not require a bachelor's degree.	
O*Net Code	O*Net Occupation Title
11-1011.03	Chief Sustainability Officers
11-1021.00	General and Operations Managers
11-2011.01	Green Marketers
11-2022.00	Sales Managers
11-3021.00	Computer and Information Systems Managers
11-3031.00	Financial Managers
11-3031.01	Treasurers and Controllers
11-3031.02	Financial Managers, Branch or Department
11-3051.01	Quality Control Systems Managers
11-3051.02	Geothermal Production Managers
11-3051.03	Biofuels Production Managers
11-3051.04	Biomass Power Plant Managers
11-3051.05	Methane/Landfill Gas Collection System Operators
11-3051.06	Hydroelectric Production Managers
11-3071.03	Logistics Managers
11-9013.00	Farmers, Ranchers, and Other Agricultural Managers
11-9013.01	Nursery and Greenhouse Managers
11-9013.02	Farm and Ranch Managers
11-9013.03	Aquacultural Managers
11-9039.01	Distance Learning Coordinators
11-9039.02	Fitness and Wellness Coordinators
11-9041.01	Biofuels/Biodiesel Technology and Product Development Managers
11-9111.00	Medical and Health Services Managers
11-9121.01	Clinical Research Coordinators
11-9121.02	Water Resource Specialists
11-9199.00	Managers, All Other
11-9199.01	Regulatory Affairs Managers
11-9199.02	Compliance Managers
11-9199.03	Investment Fund Managers
11-9199.04	Supply Chain Managers
11-9199.07	Security Managers
11-9199.08	Loss Prevention Managers
11-9199.09	Wind Energy Operations Managers
11-9199.10	Wind Energy Project Managers
11-9199.11	Brownfield Redevelopment Specialists and Site Managers
13-1041.07	Regulatory Affairs Specialists
13-1071.00	Human Resources Specialists

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Bureau of Labor Statistics "Bright Outlook" Occupations

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Occupations that are currently "apprenticeable" according to the US Dept. of Labor	
Occupations that are not currently "apprenticeable" according to the US Dept. of Labor, generally do require some post-secondary education or training, but generally do not require a bachelor's degree.	
O*Net Code	O*Net Occupation Title
13-1081.01	Logistics Engineers
13-1081.02	Logistics Analysts
13-1111.00	Management Analysts
13-1161.00	Market Research Analysts and Marketing Specialists
13-1199.00	Business Operations Specialists, All Other
13-1199.01	Energy Auditors
13-1199.02	Security Management Specialists
13-1199.03	Customs Brokers
13-1199.04	Business Continuity Planners
13-1199.05	Sustainability Specialists
13-1199.06	Online Merchants
13-2011.00	Accountants and Auditors
13-2011.01	Accountants
13-2011.02	Auditors
13-2052.00	Personal Financial Advisors
13-2071.00	Credit Counselors
13-2071.01	Loan Counselors
13-2099.01	Financial Quantitative Analysts
13-2099.02	Risk Management Specialists
13-2099.03	Investment Underwriters
13-2099.04	Fraud Examiners, Investigators and Analysts
15-1121.00	Computer Systems Analysts
15-1121.01	Informatics Nurse Specialists
15-1122.00	Information Security Analysts
15-1132.00	Software Developers, Applications
15-1133.00	Software Developers, Systems Software
15-1134.00	Web Developers
15-1143.01	Telecommunications Engineering Specialists
15-1151.00	Computer User Support Specialists
15-1199.01	Software Quality Assurance Engineers and Testers
15-1199.02	Computer Systems Engineers/Architects
15-1199.03	Web Administrators
15-1199.04	Geospatial Information Scientists and Technologists
15-1199.05	Geographic Information Systems Technicians
15-1199.06	Database Architects
15-1199.07	Data Warehousing Specialists
15-1199.08	Business Intelligence Analysts
15-1199.09	Information Technology Project Managers

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Occupations that are currently "apprenticeable" according to the US Dept. of Labor	
Occupations that are not currently "apprenticeable" according to the US Dept. of Labor, generally do require some post-secondary education or training, but generally do not require a bachelor's degree.	
O*Net Code	O*Net Occupation Title
15-1199.10	Search Marketing Strategists
15-1199.11	Video Game Designers
15-1199.12	Document Management Specialists
15-2011.00	Actuaries
15-2021.00	Mathematicians
15-2031.00	Operations Research Analysts
15-2041.00	Statisticians
15-2041.01	Biostatisticians
15-2041.02	Clinical Data Managers
17-1021.00	Cartographers and Photogrammetrists
17-1022.01	Geodetic Surveyors
17-2031.00	Biomedical Engineers
17-2051.00	Civil Engineers
17-2051.01	Transportation Engineers
17-2072.01	Radio Frequency Identification Device Specialists
17-2081.01	Water/Wastewater Engineers
17-2112.01	Human Factors Engineers and Ergonomists
17-2141.00	Mechanical Engineers
17-2141.01	Fuel Cell Engineers
17-2141.02	Automotive Engineers
17-2199.01	Biochemical Engineers
17-2199.02	Validation Engineers
17-2199.03	Energy Engineers
17-2199.04	Manufacturing Engineers
17-2199.05	Mechatronics Engineers
17-2199.06	Microsystems Engineers
17-2199.07	Photonics Engineers
17-2199.08	Robotics Engineers
17-2199.09	Nanosystems Engineers
17-2199.10	Wind Energy Engineers
17-2199.11	Solar Energy Systems Engineers
17-3024.01	Robotics Technicians
17-3027.01	Automotive Engineering Technicians
17-3029.01	Non-Destructive Testing Specialists
17-3029.02	Electrical Engineering Technologists
17-3029.03	Electromechanical Engineering Technologists
17-3029.04	Electronics Engineering Technologists
17-3029.05	Industrial Engineering Technologists

Attachment D
Bureau of Labor Statistics "Bright Outlook" Occupations

BUREAU OF LABOR STATISTICS "BRIGHT OUTLOOK" OCCUPATIONS*	
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Occupations that are currently "apprenticeable" according to the US Dept. of Labor	
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O*Net Code	O*Net Occupation Title
17-3029.06	Manufacturing Engineering Technologists
17-3029.07	Mechanical Engineering Technologists
17-3029.08	Photonics Technicians
17-3029.09	Manufacturing Production Technicians
17-3029.10	Fuel Cell Technicians
17-3029.11	Nanotechnology Engineering Technologists
17-3029.12	Nanotechnology Engineering Technicians
19-1029.01	Bioinformatics Scientists
19-1029.02	Molecular and Cellular Biologists
19-1029.03	Geneticists
19-2041.01	Climate Change Analysts
19-2041.02	Environmental Restoration Planners
19-2041.03	Industrial Ecologists
19-2099.01	Remote Sensing Scientists and Technologists
19-3011.01	Environmental Economists
19-3031.00	Clinical, Counseling, and School Psychologists
19-3031.01	School Psychologists
19-3031.02	Clinical Psychologists
19-3031.03	Counseling Psychologists
19-3032.00	Industrial-Organizational Psychologists
19-3039.01	Neuropsychologists and Clinical Neuropsychologists
19-3099.01	Transportation Planners
19-4092.00	Forensic Science Technicians
19-4099.01	Quality Control Analysts
19-4099.02	Precision Agriculture Technicians
19-4099.03	Remote Sensing Technicians
21-1011.00	Substance Abuse and Behavioral Disorder Counselors
21-1013.00	Marriage and Family Therapists
21-1014.00	Mental Health Counselors
21-1022.00	Healthcare Social Workers
21-1023.00	Mental Health and Substance Abuse Social Workers
21-1093.00	Social and Human Service Assistants
21-1094.00	Community Health Workers
23-1011.00	Lawyers
25-1022.00	Mathematical Science Teachers, Postsecondary
25-1042.00	Biological Science Teachers, Postsecondary
25-1052.00	Chemistry Teachers, Postsecondary
25-1054.00	Physics Teachers, Postsecondary

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O*Net Code	O*Net Occupation Title		
25-1062.00	Area, Ethnic, and Cultural Studies Teachers, Postsecondary		
25-1066.00	Psychology Teachers, Postsecondary		
25-1067.00	Sociology Teachers, Postsecondary		
25-1069.00	Social Sciences Teachers, Postsecondary, All Other		
25-1071.00	Health Specialties Teachers, Postsecondary		
25-1072.00	Nursing Instructors and Teachers, Postsecondary		
25-1111.00	Criminal Justice and Law Enforcement Teachers, Postsecondary		
25-1112.00	Law Teachers, Postsecondary		
25-1113.00	Social Work Teachers, Postsecondary		
25-2011.00	Preschool Teachers, Except Special Education		
25-2021.00	Elementary School Teachers, Except Special Education		
25-2022.00	Middle School Teachers, Except Special and Career/Technical Education		
25-2031.00	Secondary School Teachers, Except Special and Career/Technical Education		
25-2059.01	Adapted Physical Education Specialists		
25-3021.00	Self-Enrichment Education Teachers		
25-3099.00	Teachers and Instructors, All Other		
25-3099.02	Tutors		
25-9031.01	Instructional Designers and Technologists		
25-9041.00	Teacher Assistants		
27-3091.00	Interpreters and Translators		
27-4032.00	Film and Video Editors		
29-1011.00	Chiropractors		
29-1021.00	Dentists, General		
29-1022.00	Oral and Maxillofacial Surgeons		
29-1023.00	Orthodontists		
29-1024.00	Prosthodontists		
29-1031.00	Dietitians and Nutritionists		
29-1041.00	Optometrists		
29-1061.00	Anesthesiologists		
29-1064.00	Obstetricians and Gynecologists		
29-1066.00	Psychiatrists		
29-1067.00	Surgeons		
29-1069.00	Physicians and Surgeons, All Other		
29-1069.01	Allergists and Immunologists		
29-1069.02	Dermatologists		
29-1069.03	Hospitalists		
29-1069.04	Neurologists		
29-1069.05	Nuclear Medicine Physicians		

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O*Net Code	O*Net Occupation Title
29-1069.06	Ophthalmologists
29-1069.07	Pathologists
29-1069.08	Physical Medicine and Rehabilitation Physicians
29-1069.09	Preventive Medicine Physicians
29-1069.10	Radiologists
29-1069.11	Sports Medicine Physicians
29-1069.12	Urologists
29-1071.00	Physician Assistants
29-1071.01	Anesthesiologist Assistants
29-1081.00	Podiatrists
29-1122.00	Occupational Therapists
29-1122.01	Low Vision Therapists, Orientation and Mobility Specialists, and Vision Rehabilitation Therapists
29-1123.00	Physical Therapists
29-1124.00	Radiation Therapists
29-1125.01	Art Therapists
29-1125.02	Music Therapists
29-1127.00	Speech-Language Pathologists
29-1129.00	Therapists, All Other
29-1141.00	Registered Nurses
29-1141.01	Acute Care Nurses
29-1141.02	Advanced Practice Psychiatric Nurses
29-1141.03	Critical Care Nurses
29-1141.04	Clinical Nurse Specialists
29-1151.00	Nurse Anesthetists
29-1161.00	Nurse Midwives
29-1171.00	Nurse Practitioners
29-1181.00	Audiologists
29-1199.01	Acupuncturists
29-1199.04	Naturopathic Physicians
29-1199.05	Orthoptists
29-2011.00	Medical and Clinical Laboratory Technologists
29-2011.01	Cytogenetic Technologists
29-2011.02	Cytotechnologists
29-2011.03	Histotechnologists and Histologic Technicians
29-2012.00	Medical and Clinical Laboratory Technicians
29-2021.00	Dental Hygienists
29-2031.00	Cardiovascular Technologists and Technicians
29-2032.00	Diagnostic Medical Sonographers

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 Bureau of Labor Statistics "Bright Outlook" Occupations

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O*Net Code	O*Net Occupation Title
29-2041.00	Emergency Medical Technicians and Paramedics
29-2055.00	Surgical Technologists
29-2056.00	Veterinary Technologists and Technicians
29-2057.00	Ophthalmic Medical Technicians
29-2061.00	Licensed Practical and Licensed Vocational Nurses
29-2071.00	Medical Records and Health Information Technicians
29-2081.00	Opticians, Dispensing
29-2091.00	Orthotists and Prosthetists
29-2092.00	Hearing Aid Specialists
29-2099.00	Health Technologists and Technicians, All Other
29-2099.01	Neurodiagnostic Technologists
29-2099.05	Ophthalmic Medical Technologists
29-2099.06	Radiologic Technicians
29-2099.07	Surgical Assistants
29-9091.00	Athletic Trainers
29-9092.00	Genetic Counselors
29-9099.00	Healthcare Practitioners and Technical Workers, All Other
29-9099.01	Midwives
31-1011.00	Home Health Aides
31-1014.00	Nursing Assistants
31-2011.00	Occupational Therapy Assistants
31-2012.00	Occupational Therapy Aides
31-2021.00	Physical Therapist Assistants
31-2022.00	Physical Therapist Aides
31-9011.00	Massage Therapists
31-9091.00	Dental Assistants
31-9092.00	Medical Assistants
31-9093.00	Medical Equipment Preparers
31-9097.00	Phlebotomists
31-9099.01	Speech-Language Pathology Assistants
31-9099.02	Endoscopy Technicians
33-2011.00	Firefighters
33-2011.01	Municipal Firefighters
33-2011.02	Forest Firefighters
33-3012.00	Correctional Officers and Jailers
33-3021.06	Intelligence Analysts
33-3051.00	Police and Sheriff's Patrol Officers
33-3051.01	Police Patrol Officers

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O*Net Code	O*Net Occupation Title
33-3051.03	Sheriffs and Deputy Sheriffs
33-9032.00	Security Guards
33-9099.02	Retail Loss Prevention Specialists
35-1012.00	First-Line Supervisors of Food Preparation and Serving Workers
35-2011.00	Cooks, Fast Food
35-2012.00	Cooks, Institution and Cafeteria
35-2014.00	Cooks, Restaurant
35-2021.00	Food Preparation Workers
35-3011.00	Bartenders
35-3021.00	Combined Food Preparation and Serving Workers, Including Fast Food
35-3022.00	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop
35-3022.01	Baristas
35-3031.00	Waiters and Waitresses
35-9011.00	Dining Room and Cafeteria Attendants and Bartender Helpers
35-9021.00	Dishwashers
35-9031.00	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
37-2011.00	Janitors and Cleaners, Except Maids and Housekeeping Cleaners
37-2012.00	Maids and Housekeeping Cleaners
37-3011.00	Landscaping and Groundskeeping Workers
39-1021.01	Spa Managers
39-3091.00	Amusement and Recreation Attendants
39-3099.00	Entertainment Attendants and Related Workers, All Other
39-5012.00	Hairdressers, Hairstylists, and Cosmetologists
39-5091.00	Makeup Artists, Theatrical and Performance
39-9011.00	Childcare Workers
39-9011.01	Nannies
39-9021.00	Personal Care Aides
39-9032.00	Recreation Workers
39-9041.00	Residential Advisors
41-1011.00	First-Line Supervisors of Retail Sales Workers
41-2011.00	Cashiers
41-2021.00	Counter and Rental Clerks
41-2031.00	Retail Salespersons
41-3021.00	Insurance Sales Agents
41-3031.03	Securities and Commodities Traders
41-3099.00	Sales Representatives, Services, All Other
41-3099.01	Energy Brokers
41-4011.07	Solar Sales Representatives and Assessors

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O*Net Code	O*Net Occupation Title
41-4012.00	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
43-1011.00	First-Line Supervisors of Office and Administrative Support Workers
43-3021.00	Billing and Posting Clerks
43-3021.01	Statement Clerks
43-3021.02	Billing, Cost, and Rate Clerks
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks
43-3071.00	Tellers
43-4051.00	Customer Service Representatives
43-4051.03	Patient Representatives
43-4081.00	Hotel, Motel, and Resort Desk Clerks
43-4171.00	Receptionists and Information Clerks
43-5011.01	Freight Forwarders
43-5071.00	Shipping, Receiving, and Traffic Clerks
43-5081.00	Stock Clerks and Order Fillers
43-5081.01	Stock Clerks, Sales Floor
43-5081.02	Marking Clerks
43-5081.03	Stock Clerks- Stockroom, Warehouse, or Storage Yard
43-5081.04	Order Fillers, Wholesale and Retail Sales
43-6013.00	Medical Secretaries
43-6014.00	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
43-9061.00	Office Clerks, General
43-9111.01	Bioinformatics Technicians
45-2092.00	Farmworkers and Laborers, Crop, Nursery, and Greenhouse
45-2092.01	Nursery Workers
45-2092.02	Farmworkers and Laborers, Crop
47-1011.00	First-Line Supervisors of Construction Trades and Extraction Workers
47-1011.03	Solar Energy Installation Managers
47-2021.00	Brickmasons and Blockmasons
47-2022.00	Stonemasons
47-2031.00	Carpenters
47-2031.01	Construction Carpenters
47-2031.02	Rough Carpenters
47-2061.00	Construction Laborers
47-2072.00	Pile-Driver Operators
47-2111.00	Electricians
47-2132.00	Insulation Workers, Mechanical
47-2152.00	Plumbers, Pipefitters, and Steamfitters
47-2152.01	Pipe Fitters and Steamfitters

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O*Net Code	O*Net Occupation Title
47-2152.02	Plumbers
47-2171.00	Reinforcing Iron and Rebar Workers
47-2231.00	Solar Photovoltaic Installers
47-3011.00	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
47-3013.00	Helpers--Electricians
47-3016.00	Helpers--Roofers
47-4071.00	Septic Tank Servicers and Sewer Pipe Cleaners
47-4099.02	Solar Thermal Installers and Technicians
47-4099.03	Weatherization Installers and Technicians
47-5021.00	Earth Drillers, Except Oil and Gas
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers
49-3023.00	Automotive Service Technicians and Mechanics
49-3023.01	Automotive Master Mechanics
49-3023.02	Automotive Specialty Technicians
49-3091.00	Bicycle Repairers
49-9021.00	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
49-9021.01	Heating and Air Conditioning Mechanics and Installers
49-9021.02	Refrigeration Mechanics and Installers
49-9041.00	Industrial Machinery Mechanics
49-9044.00	Millwrights
49-9071.00	Maintenance and Repair Workers, General
49-9081.00	Wind Turbine Service Technicians
49-9092.00	Commercial Divers
49-9099.01	Geothermal Technicians
51-2092.00	Team Assemblers
51-4011.00	Computer-Controlled Machine Tool Operators, Metal and Plastic
51-4012.00	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic
51-4041.00	Machinists
51-4121.00	Welders, Cutters, Solderers, and Brazers
51-4121.06	Welders, Cutters, and Welder Fitters
51-4121.07	Solderers and Brazers
51-8099.01	Biofuels Processing Technicians
51-8099.02	Methane/Landfill Gas Generation System Technicians
51-8099.03	Biomass Plant Technicians
51-8099.04	Hydroelectric Plant Technicians
51-9061.00	Inspectors, Testers, Sorters, Samplers, and Weighers
51-9111.00	Packaging and Filling Machine Operators and Tenders
51-9198.00	Helpers--Production Workers

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O*Net Code	O*Net Occupation Title
51-9199.01	Recycling and Reclamation Workers
53-1021.01	Recycling Coordinators
53-3011.00	Ambulance Drivers and Attendants, Except Emergency Medical Technicians
53-3032.00	Heavy and Tractor-Trailer Truck Drivers
53-3033.00	Light Truck or Delivery Services Drivers
53-7051.00	Industrial Truck and Tractor Operators
53-7061.00	Cleaners of Vehicles and Equipment
53-7062.00	Laborers and Freight, Stock, and Material Movers, Hand
53-7064.00	Packers and Packagers, Hand