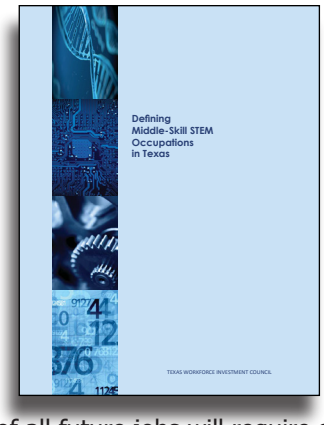
Defining Middle-Skill STEM Occupations in Texas



One of the key issues in the *Texas Workforce System Strategic Plan FY 2016—FY 2023* is the growing demand for middle-skill workers in science, technology, engineering, and math (STEM) occupations. These jobs require education beyond high school but less than a four-year degree and are often understudied compared to STEM occupations requiring a bachelor's or graduate degree. Middle-skill STEM occupations encompass many of the fastest-growing and most-needed jobs in the nation. In December 2015, the Texas Workforce Investment Council prepared the report *Defining Middle-Skill STEM Occupations in Texas* to identify and analyze middle-skill STEM occupations important to the Texas economy.

Middle-Skill STEM Occupations across the Nation

Over the past few decades, advances in technology have increased the need for workplace specialization. Industries across the nation are trying to fill critical jobs as the demand for middle-skill workers with STEM-related training continues to increase. Projections indicate that 65 percent of all future jobs will require some type of postsecondary education or training, and nearly half of those jobs will be in middle-skill occupations. Estimates of job growth in STEM through 2024 are also promising; approximately 80 percent of the fastest growing occupations are in STEM fields. Moreover, middle-skill STEM occupations tend to be prevalent in all regions and generally pay high wages.

While there is a widely accepted definition of middle-skill occupations, there is not a single national definition of STEM occupations. This report analyzed several sources of data to further define middle-skill STEM occupations, then refined that data to identify those occupations that are important to Texas.

Middle-Skill STEM Occupations in the Texas Economy

Current estimates indicate that demand for middle-skill jobs will remain strong in Texas. Middle-skill STEM employment is estimated to be 10.5 percent of total state employment. Based on available employment information, the entire Texas middle-skill STEM workforce is projected to increase by 24 percent to nearly 1.5 million workers in the next decade. Additionally, potential earnings for STEM occupations are nearly double that of all other jobs in Texas. Employment in STEM jobs will only increase over the next decade, with significant opportunities in healthcare, construction, and manufacturing fields.

This report analyzed 11 sources of data to create a more comprehensive list of middle-skill STEM occupations. Using the process described on the following page, 97 middle-skill occupations were identified as STEM or STEM-related in Texas. Findings suggest that workers in these occupations will continue to have significant employment opportunities in the future and are integral to the development and sustained health of the state of Texas.

Emerging Occupations in Texas

Almost half of the 97 middle-skill STEM occupations identified in this report are in four major occupation groups important to the Texas economy based on economic growth and income potential.

Healthcare Practitioners and Technical Occupations

Middle-skill STEM workers in this group are expected to increase by well over 100,000 workers by 2022. The most common jobs are registered nurses, licensed practical and vocational nurses, and pharmacy technicians. Workers can earn average annual wages of $49,000, and some professions pay upwards of $80,000.

Healthcare Support Occupations

About 25,000 middle-skill STEM workers are expected to be added to the workforce by 2022, with the majority of workers employed as medical and dental assistants. Workers in this group can earn annual wages of $51,000, and upwards of $70,000.

Construction and Extraction Occupations

With more than 600,000 workers, Texas has the highest number of individuals employed in this group in the nation. Several occupations are expected to grow significantly over the next decade, with electricians and operating engineers and construction operators leading the way. Workers can earn an average annual salary near $40,000, and even upwards of $67,000.

Production Occupations

Middle-skill STEM production occupations are projected to grow by more than 20,000 workers, totaling almost 130,000 workers by 2022. Chemical equipment and gas plant operators can earn well over the state average in a year, reaching nearly $66,000.

A Process Summary: Identifying Industry-Based Certifications for Middle-Skill STEM Occupations in Texas

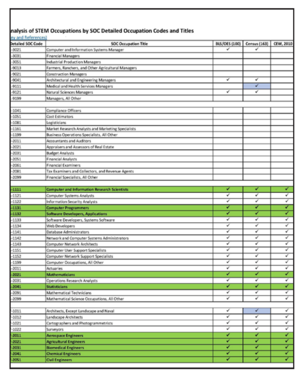
One of the roles of the Texas Workforce Investment Council (Council) is to provide research, information, and analysis that helps to align different elements of the Texas workforce system. To that end, the Council developed a multi-step research project to better understand and evaluate two key issues in Texas: the changing demand for middle-skill workers and the increasing demand for industry-based certifications for workers. The summary below describes the process by which third-party, industry-based certifications were identified for middle-skill science, technology, engineering, and mathematics (STEM) occupations in Texas.

This process is the culmination of research published in two previous Council reports. The first report, *Tracking Industry-Based Certifications: Promising Practices in Capturing Data on the Workforce Supply of Industry-Certified Workers*, distinguishes among various types of postsecondary credentials. While licenses and certificates are generally awarded by academic institutions or similar groups based on education and/or training, certifications are assessed by a third-party provider based on industry-recognized standards and are becoming more important in the workforce environment. The second report, *Defining Middle-Skill STEM Occupations in Texas*, presents a method for identifying and analyzing middle-skill STEM occupations important to the Texas economy. The goal of the research project is to create a broad list of certifications needed for middle-skill STEM jobs in order to support workforce system partners in implementing programs, services, and initiatives.

Classifying Middle-Skill STEM Occupations in Texas

The research process began with a comprehensive list of middle-skill STEM occupations important to the Texas economy.

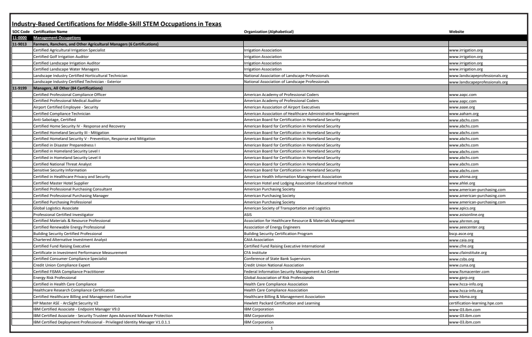
- Eleven sources of data from nine organizations were analyzed to create a list of 257 STEM occupations across the nation.
- The list was incorporated with national information about typical education and training levels to identify 85 middle-skill jobs.
- After the addition of 12 occupations determined to be significant to the Texas economy, a total of 97 middle-skill STEM occupations were identified for Texas.



Identifying Industry-Based Certifications for Middle-Skill STEM Occupations

The next step in the process combined the list of middle-skill STEM occupations with the corresponding certifications for those occupations. Ultimately, just over 1,500 certifications from more than 300 certifying organizations were identified for critical middle-skill STEM occupations in Texas.

- Using the Department of Labor's (DOL) CareerOneStop and O*Net certification databases, 97 previously identified jobs were searched by their Standard Occupational Classification codes.
- The numbers of certifications and certification organizations for each occupation were cataloged in a spreadsheet. Once duplicates were removed, 2,371 certifications were identified.
- Each certification was analyzed to ensure it matched the definition of certifications from the Council's first research report. The list was then reanalyzed to remove errors and overlap.



- Eighty-three certifications determined to be important to the workforce system but not identified by DOL databases were added to the list.
- After duplicates were removed, a total of 1,528 certifications from 338 certifying organizations were identified.

Next Steps

This process shows that the Texas workforce system has a vast network of certifications and certifying organizations. Finding occupation-specific certifications can be daunting for any workforce board, let alone for an individual worker. This research illustrates one method for identifying industry-based certifications for middle-skill STEM occupations in the Texas economy. The next step is to further evaluate the list of certifications to identify key certifications for the state of Texas.