

# STEM IS CTE

## Career and technical education (CTE)

prepares students through active, real-world, project-based learning to enter the science, technology, engineering and mathematics (STEM) workforce, which is growing rapidly – STEM jobs are projected to increase by 11% through 2030.<sup>1</sup>

In addition, CTE programs develop students' STEM competencies like data analysis and the use of complex software – skills that are increasingly required both for STEM jobs and for jobs not classified as STEM.<sup>2</sup>

There is no better STEM laboratory than a CTE classroom!

## STEM JOBS

CTE prepares students for a wide range of STEM-related occupations such as:

- Automotive technician
- Graphic designer
- CNC machinist
- Clinical laboratory technician
- Financial analyst
- Food science technician
- Medical sonographer
- Computer support specialist
- Civil engineer
- Wind turbine service technician

## STEM SKILLS

Across all 16 Career Clusters<sup>®</sup>, CTE enables students to master STEM skills that are valuable in a variety of careers,<sup>7</sup> such as data literacy and computational thinking<sup>8</sup> as well as problem solving.<sup>9</sup> STEM competencies are critical for a workforce in which nearly 80% of middle-skill jobs require foundational digital skills.<sup>10</sup>

More than **700,000**<sup>4</sup> jobs are open in cybersecurity, including occupations like network and computer systems administrators, who earn almost **\$81,000** per year.<sup>5</sup>

## APPLIED LEARNING

CTE students develop STEM skills through hands-on learning experiences in laboratories, on worksites and with high-tech virtual and augmented reality simulations. They also practice technical and employability skills such as teamwork, communication and problem solving, which are increasingly important to STEM employers.<sup>14</sup>

**Learn more at [acteonline.org](https://acteonline.org)**

About **3 million** data centers in the United States store and process data for web-related services. Each supports **157 jobs** and pays **\$7.8 million** in wages annually.<sup>3</sup>

## INDUSTRY CREDENTIALS

CTE students earn STEM credentials most requested in job postings, such as the CompTIA A+, Automotive Service Excellence, Microsoft Office Specialist and Adobe Certified Associate certifications as well as the NCLEX – Registered Nurse licensure. Together, these credentials feature in more than 6.2 million postings.<sup>11</sup>

## POSTSECONDARY AND CAREER SUCCESS

CTE programs incorporate postsecondary certificates and associate degrees that enable people to pursue high-wage STEM careers and options for further education. Over half of STEM workers have education below the bachelor's degree level. These individuals earn 60% more annually than non-STEM workers without a bachelor's degree,<sup>12</sup> are employed at higher rates<sup>13</sup> and, through career pathways and stackable credentials, can go on to earn bachelor's degrees and higher in STEM fields.

Many jobs in data science pay more than **\$100,000** annually. Employment of data scientists is growing much faster than other occupations – a **36%** increase in jobs through 2031.<sup>6</sup>

<sup>1</sup> U.S. Bureau of Labor and Statistics. (2022, April 19). *Employment projections: Employment in STEM occupations*. Retrieved from <https://www.bls.gov/emp/tables/stem-employment.htm>

<sup>2</sup> Sigelman, M., Taska, B., O'Kane, L., Nitschke, J., Strack, R., Bair, J., Breitling, F., & Kotsis, A. (2022, May). *Shifting skills, moving targets, and remaking the workforce*. Lightcast. Retrieved from <https://www.economicmodeling.com/2022/05/23/new-report-measures-blazing-pace-of-skill-change/>

<sup>3</sup> U.S. Chamber of Commerce Technology Engagement Center. (2017, June). *Data centers: Jobs & opportunities in communities nationwide*. Retrieved from <https://www.uschamber.com/technology/data-centers-jobs-opportunities-communities-nationwide>

<sup>4</sup> CyberSeek. (N.d.). *Cybersecurity supply and demand heat map*. Retrieved from <https://www.cyberseek.org/heatmap.html>

<sup>5</sup> U.S. Bureau of Labor and Statistics. (2022, April 27). *Occupational employment handbook: Network and computer systems administrators*. Retrieved from <https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm>

<sup>6</sup> U.S. Bureau of Labor and Statistics. (2022, April 27). *Occupational employment handbook: Data scientists*. Retrieved from <https://www.bls.gov/ooh/math/data-scientists.htm>

<sup>7</sup> Advance CTE. (2013, December). *CTE is your STEM strategy*. Retrieved from <https://cte.careertech.org/sites/default/files/CTEYourSTEMStrategy-FINAL.pdf>

<sup>8</sup> Malyn-Smith, J., Julison, J., MacGillivray, S., Lee, I., & McCurdy-Kirlis, C. (2021, May). *K-8 STEM career competencies: Developing foundational skills for the future of work*. Retrieved from <https://www.edc.org/sites/default/files/uploads/K-8-STEM-Career-Competencies.pdf>

<sup>9</sup> Advance CTE. (2013, December). *CTE is your STEM strategy*. Retrieved from <https://cte.careertech.org/sites/default/files/CTEYourSTEMStrategy-FINAL.pdf>

<sup>10</sup> Hecker, I., & Loprest, P. (2019, August). *Foundational digital skills for career readiness*. Urban Institute. Retrieved from [https://www.urban.org/sites/default/files/publication/100843/foundational\\_digital\\_skills\\_for\\_career\\_progress\\_2.pdf](https://www.urban.org/sites/default/files/publication/100843/foundational_digital_skills_for_career_progress_2.pdf)

<sup>11</sup> ExcelinEd & Burning Glass Technologies. (2020, September). *Credentials matter phase 2*. Retrieved from [https://excelined.org/wp-content/uploads/2020/11/ExcelinEdBurningGlassTechnologies.CredentialsMatter.Phase2\\_Report\\_September2020.pdf](https://excelined.org/wp-content/uploads/2020/11/ExcelinEdBurningGlassTechnologies.CredentialsMatter.Phase2_Report_September2020.pdf)

<sup>12</sup> Okrent, A., & Burke, A. (2021, August 31). *The STEM labor force of today: Scientists, engineers, and skilled technical workers*. National Science Foundation. Retrieved from <https://ncses.nsf.gov/pubs/nsb20212/executive-summary>

<sup>13</sup> Ibid.

<sup>14</sup> Sigelman, M., Taska, B., O'Kane, L., Nitschke, J., Strack, R., Bair, J., Breitling, F., & Kotsis, A. (2022, May). *Shifting skills, moving targets, and remaking the workforce*. Lightcast. Retrieved from <https://www.economicmodeling.com/2022/05/23/new-report-measures-blazing-pace-of-skill-change/>