


## Chapter 9

# The Inclusion of Persons With Disabilities in Engineering Education and Careers

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### ABSTRACT

*The Americans with Disabilities Act (ADA) and other laws have made strides towards equity and inclusion for persons with disabilities in the US. Despite this, challenges persist both in higher education and the workforce, particularly in science, technology, engineering, and mathematics (STEM) fields. While students with disabilities indicate interest in and intent to major in STEM disciplines at the same rate as their peers without disabilities, they are not retained through graduation at the same rates, and thus remain underrepresented among STEM graduates and professionals. Those who do complete STEM degrees experience higher unemployment rates and lower average salaries than their colleagues without disabilities. For engineering innovations to optimally serve society, the engineering profession must be representative of society. And this must go beyond counting the numbers; inclusion of diverse perspectives is a must. This chapter shares challenges, opportunities, and strategies for inclusion of persons with disabilities in engineering education and practice.*

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## INTRODUCTION

Programs devoted to inclusion in engineering education have historically excluded disability as a dimension of diversity, choosing to focus on gender and racial or ethnic dimensions. However, persons with disabilities make up a large percentage of the potential workforce, and it would be a disservice to the individuals and the society as a whole to not provide equal and equitable educational and workplace opportunities for all. As such, it is critical that the barriers to success for persons with disabilities are identified and removed in the education and practice of engineering.

This chapter shares challenges, opportunities, and strategies for inclusion of persons with disabilities in engineering education and practice. It describes barriers students and employees with disabilities encounter and how those contribute to an organization's culture and climate, resulting in inequities and attrition; and it offers recommendations that align with academic and workforce expectations set forth in ABET criteria, engineering societies' codes of ethics, and the Office of Federal Contract Compliance Programs' (OFCCP's) affirmative action requirements.

## BACKGROUND

### Persons with Disabilities in STEM Education

Nearly 20% of the 19.5 million undergraduate students in the United States report having at least one disability. Table 1 provides a breakdown of undergraduate students with and without reported disabilities. The US Department of Education, National Center for Education Statistics describes students with disabilities as those who reported having one or more of the following (US DOE, 2018):

- *Blindness or visual impairment that cannot be corrected by wearing glasses*
- *Hearing impairment (e.g., deaf or hard of hearing)*
- *Orthopedic or mobility impairment*
- *Speech or language impairment*
- *Learning, mental, emotional, or psychiatric condition (e.g., serious learning disability, depression, ADD, or ADHD)*
- *Other health impairment or problem*

Specialized resources are often necessary to accommodate students reporting a disability (SRDs) to ensure equitable opportunities for educational success. For federally funded institutions, accommodations are not only encouraged, but required to avoid discrimination. A statement of nondiscrimination on the basis of disability

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