

# Polytechnic universities focus on practical, career-oriented skills, offering an alternative to traditional universities

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Unlike traditional research universities and private liberal arts colleges, polytechnic universities tend to offer apprenticeships and microcredentials, all geared toward giving students practical skills they can use in the workforce.

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For decades, a four-year college degree was widely seen as the standard path to getting most midlevel jobs in the United States. It was the expected entry point for getting a job as a marketing specialist, project manager, IT support analyst, among other roles.

But this expectation is shifting. Many fields – including cybersecurity, health care and advanced manufacturing – are facing significant shortages in skilled workers. The gap between available skilled jobs and workers is likely to push employers to rethink what they require from job candidates over the next decade.

A major demographic shift will also play a role. Between 2024 and 2032, an estimated 18.4 million experienced workers with education beyond high school are expected to retire, according to September 2025 findings by Georgetown University's center on education and the workforce.

Only 13.8 million younger workers with similar education levels are expected to enter the workforce during the same period, these findings show. This trend will also make it harder for employers to fill roles that traditionally require a college degree.

At the same time, 25 states over the past few years have enacted legislation and executive orders to remove college degree requirements for people applying for some public sector jobs, signaling a shift in how essential college degrees are for getting hired for some kinds of work.

These shifts underscore a broader trend: A four-year degree is no longer essential for many kinds of work.

Hiring data tells a similar story. As of January 2024, 52% of U.S. job postings on Indeed did not mention any formal education requirement, up from 48% in 2019. Job postings requiring at least a bachelor's degree also dropped from 20.4% to 17.8% between 2018 and 2023.

As hiring expectations change – influenced in part by advances in artificial intelligence – employers may struggle to find candidates who already have the right job-specific skills.

With over 20 years of experience as professors who also train employees in industries such as manufacturing, health care and business information technologies, we believe that college degrees shouldn't be mandatory for some jobs.



Florida Polytechnic University is one of several polytechnic universities in the U.S. offering a STEM and career-focused education.

*John Greim/LightRocket via Getty Images*

## A widening gap

Nearly half of recent college graduates say they feel unprepared for entry-level work, and 56% cite a lack of job-specific skills as the biggest issue, according to a 2025 report by Cengage Group, an education and workforce training company.

Alternative pathways – apprenticeships, certifications and on-the-job training – can give workers practical skills and help employers fill crucial roles more quickly.

Employers dropping degree requirements is only one step toward this goal. We think it is also important that prospective college students and their families are aware of educational opportunities besides a traditional four-year degree.

## Understanding polytechnic universities

Some people think of higher education in terms of traditional liberal arts colleges or research universities. But there are also polytechnic universities, which focus on hands-on, career-aligned learning and emphasize strong STEM and technical programs. These schools often prepare students for exactly the kinds of jobs employers struggle to fill.

There are about 10 major polytechnic universities in the U.S. Some well-known polytechnic universities are California Polytechnic State University in San Luis Obispo, California, Worcester Polytechnic Institute in Worcester, Massachusetts, and State University of New York Polytechnic Institute in Marcy and Albany, New York.

Instead of offering a wide range of liberal arts majors, polytechnic universities offer majors such as engineering, robotics, construction management and information technology.

A central feature of these schools is applied learning – hands-on labs, real-world projects and problem-solving experiences.

Polytechnic students can earn bachelor's and master's degrees, but they also can often get short-term certificates in fields such as human resources, instructional design, project management and digital marketing. Many programs also include apprenticeships, such as workplace training specialists.

Students can also pursue microcredentials, which involve short course sequences that build targeted skills, such as business writing or engineering mechanics. These options give students more flexible and affordable ways to learn without committing to a traditional four-year degree.

Polytechnic universities also tend to cost less than research universities and private colleges, and students can use federal financial aid or private loans to attend.

There are some limitations. Polytechnic schools generally offer fewer majors, usually within STEM fields. Their alumni networks may be smaller, and we have found that some people perceive them as less prestigious than traditional universities because they focus more on teaching than on research.

## Real world relevance

In March 2025, we asked 10 online instructors at different polytechnic universities how they bring career-focused learning into their classes.

Our research, which will likely be published in 2026, shows that every instructor tried to make their courses feel relevant to real workplaces.

Some instructors used simulations in the course. Others shared examples from their own industry backgrounds with students. All agreed that students learn best when they can clearly connect their coursework to their career goals.

One of the most effective strategies is hiring instructors with deep industry experience. Their professional networks help programs stay aligned with the skills employers currently value.

Not every college wants to become a polytechnic, and not every student wants that style of education.

However, traditional universities can still learn from this model by adding more applied learning, embedding essential job skills into their programs, and partnering more closely with industry. These changes can better prepare students to succeed in the workforce.

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