

D&I ADVANCES ENGINEERING EDUCATION

*D&I AT ALL LEVELS IS CRUCIAL TO ACHIEVEMENT
AT INSTITUTIONS OF HIGHER EDUCATION.*

Diversity and inclusion (D&I) is more important than ever at colleges, universities and graduate schools.

It indicates to students their commitment to D&I, as well as to multiculturalism and diversity of thoughts, ideas and people in their curriculum and research, on and off campus, inside and outside their classrooms, and on their faculty and staff.

Read on to discover what universities and graduate schools readers of *Woman Engineer* magazine have named for their commitment to fostering diversity and inclusion in engineering, specifically for women in engineering.

TOP ENGINEERING SCHOOLS FOSTER D&I

Higher education has converted from an elective last stage of prescribed study that follows the completion of secondary education into an almost compulsory stage of schooling. And achieving advanced degrees has also become an almost typical practice.

This level of higher education is now especially expected among large *Fortune* 500 employers and large government agencies. They demand it of their job candidates and employees, encouraging them to constantly continue their education, as learning only advances innovation and growth, both on a personal and career level, but in terms of meeting and exceeding business, production and marketplace objectives.

Beyond universities, academies, colleges, seminaries, conservatories and institutes of technology, higher education is also available via certain college-level institutions, including vocational schools, trade schools and other career colleges that award academic degrees or professional certifications.

Obtaining at least an undergraduate degree - if not a master's or doctoral degree - is key to national economies now, both as an industry all on its own, as well as a source of trained and educated personnel for the rest of the economy.

It's also vital to career advancement and achievement as university- and graduate school-educated employees have been increasingly commanding a measurable wage premium over the last several decades, even with the ebb and flow and ups and downs of the U.S. economy and the global economy.

They also seem to have more security against unemployment because of their education level and skill sets that augment their standing in the workplace. This is particularly comforting in a harsher economy.

BY BARBARA CAPELLA LOEHR

However, in an emergent economy - such as the one now where the national unemployment rate edged even further down to 3.7% in September and October 2018, the lowest rate since 1969 - having an advanced degree distinguishes you and makes you highly preferred by companies competing for talent today.

Overall, in terms of growth in engineering, according to the U.S. Bureau of Labor Statistics (BLS), employment of engineers is projected to expand 7% through 2026, about as fast as the average for all occupations. About 194,300 new jobs are projected to be added, as well. BLS has also previously reported that there would be even faster growth for specifically biomedical engineers (23.1%), environmental engineers (12.4%) and civil engineers (8.4%) through 2024.

That last statistic jibes with the *Fall 2018 Forecast and Quarterly Report* by ConstructConnect, a provider of construction information and technology solutions in North America. It reveals that civil engineering has increased 22.2%, while residential construction dropped 2.8%.

Given all of that growth in the economy and in engineering in general, the learning that takes place at universities and graduate schools is particularly significant these days, where education is focused on theoretical and abstract elements, as well as applied aspects via internships and co-ops.

Employers in engineering, as well as in practically every profession, want to hire graduates of universities and graduate programs, who want to continue their education and pursue professional certifications that will help them drive innovation and productivity, and better position them to be able to drive faster product and product

completion timelines for better competitive edge in the domestic and global marketplaces.

They also want to do so because of the critical thinking, analytical reasoning, teamwork, information literacy, ethical judgment, decision-making, problem-solving and communication skills they learn, and because of their knowledge of liberal arts and sciences, as well as their chosen majors and areas of concentration.

And it's not all about attaining advanced degrees in just engineering. Advanced degrees such as MBAs can help marry business and technology, producing a coveted skill set sought by engineering firms today.

Now, compared to most other higher-education systems around the world, the U.S. system is largely independent from federal government regulation and is highly decentralized. The system is also incredibly diverse in that there are public institutions and private ones, very large and very small ones, secular and religiously affiliated ones, and urban, suburban and rural ones. Such diversity means that there should be a "right fit" institution for every qualified student.

However, just as there's diversity in the types of colleges, universities and graduate schools, the tenets of diversity and inclusion (D&I) have permeated the U.S. higher-education system for the better. And the call for diversity in engineering starts at the university level, as schools cultivate diversity of thought in academia, research and student bodies.

Many have learned that offering a diversified curriculum, student base, faculty and staff, and offering a diverse and inclusive learning envi-



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TOP SCHOOLS FOSTERING D&I IN ENGINEERING

Respondents to this year's survey were asked to name the top universities and graduate schools they believed offer a diversified curriculum, student base, faculty and staff, and foster a diverse and inclusive learning environment in engineering, especially for women in engineering. Here are their selections, listed in alphabetical order.



Auburn University
 Binghamton University,
 State University of New York
 California Polytechnic
 State University (Cal Poly)
 Carnegie Mellon University
 (CMU)
 Columbia University
 Cornell University
 Drexel University
 Georgia Institute of Technology
 (Georgia Tech)
 Harvard University
 Massachusetts Institute of
 Technology (MIT)
 Michigan State University (MSU)
 Milwaukee School of Engineering
 (MSOE)
 Morehouse College
 New Mexico State University
 (NMSU)
 North Carolina State University
 (NC State University)
 North Dakota State University
 (NDSU)
 Northeastern University
 The Ohio State University (OSU)
 Oregon State University
 Pennsylvania State University
 (Penn State)
 Prairie View A&M University
 (PVAMU)
 Rensselaer Polytechnic Institute
 (RPI)
 San Diego State University (SDSU)

South Dakota School of Mines &
 Technology (SD Mines)
 Southern New Hampshire University
 (SNHU)
 Stanford University
 Stony Brook University,
 State University of New York (SBU)
 Tennessee State University (TSU)
 Texas A&M
 Tuskegee University
 University at Buffalo,
 State University of New York
 University of Akron
 University of California, Berkeley
 University of California, Davis
 University of California, Los Angeles
 (UCLA)
 University of Central Florida (CUFF)
 University of Cincinnati
 University of Dayton
 University of Houston
 University of Illinois
 University of Maryland
 University of Michigan
 University of New Hampshire (UNH)
 The University of New Mexico (UNM)
 University of Pennsylvania
 Valparaiso University
 Villanova University
 Virginia Polytechnic Institute and
 State University (Virginia Tech)
 Worcester Polytechnic Institute (WPI)
 Yale University

Auburn University
 California Institute of Technology (Caltech)
 Cornell University
 Drexel University
 Georgia Institute of Technology (Georgia Tech)
 Harvard University
 Indiana University
 Lehigh University
 Massachusetts Institute of Technology (MIT)
 Michigan State University (MS)
 North Dakota State University (NDSU)
 Prairie View A&M University (PVAMU)
 Purdue University
 Rensselaer Polytechnic Institute (RPI)
 Stanford University
 Stony Brook University, State University of New York (SBU)
 Tennessee State University (TSU)
 University of California, Los Angeles (UCLA)
 University of Delaware (UD)
 University of Houston
 University of Illinois
 University of Massachusetts, Amherst (UMass Amherst)
 University of Michigan
 University of Pennsylvania
 Virginia Polytechnic Institute and State University (Virginia Tech)

Note: Listed in alphabetical order.

ronment result in better prepared, more open students, graduates and citizens who have a more expansive world view and who can approach things more imaginatively and analytically, devise unique solutions and push innovation.

In addition, having a diverse staff and faculty that are committed to creating and following a curriculum that embraces and teaches and uncovers diversity of thought, diversity of people and diversity of new ideas is essential for a university or graduate school seeking to incorporate the principles of D&I that are seen in corporate America, federal agencies and military branches, and the global business world.

If not for D&I, then students may lack the global view of the world that many top employers and agencies in the public and private sectors presume higher-ed graduates to have.

Thus, it's fair to say that D&I in all aspects of post-secondary levels of education and beyond increases knowledge base, promotes creative thinking and enhances social development. And those institutions of higher education that value D&I and multiculturalism in their students, faculty and administrative staff will better prepare students for a global society.

Thus, multiculturalism and diversity inside and outside of the classroom, and on and off campus, are fundamental to students' college experience because it helps prepare them for the real world.

Furthermore, D&I means the campus is viewed as a hospitable and engaging environment for anyone who wants to apply. Having an inclusive mission at an educational institution says something enlightened and essential about its campus, that its values diversity and will allow its students to express themselves as they see fit.

D&I is clearly more critical than ever on campuses across the country, so it's with this in mind that *Woman Engineer* magazine asked its readers as part of its 27th Annual Reader Survey, published in the Spring 2018 issue, to name the top universities and graduate schools they believed offer a diversified curriculum, student base, faculty and staff, and foster a diverse and inclusive learning environment in engineering, especially for women in engineering.

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OVERALL,
 IN TERMS OF GROWTH
 IN ENGINEERING,
 ACCORDING TO THE U.S. BUREAU OF
 LABOR STATISTICS (BLS),
 EMPLOYMENT OF ENGINEERS
 IS PROJECTED TO EXPAND
 7% THROUGH 2026.
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We compiled their answers into two lists - the Top 50 Universities and the Top 25 Graduate Schools - in alphabetical order.

Read our alphabetical listings of the Top 50 Universities and the Top 25 Graduate Schools, as named by readers, for their commitment to fostering D&I in engineering.



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