

# ACE ENABLES Future Engineers\*



*“I was going to drop out of high school, but after going through the ACE experience I am now going into my third year of college at Wentworth Institute of Technology.”*

— 2009 alumnus, junior, electrical engineering major

## THE PRESSING NEED

- By 2020 the civil, electrical and mechanical engineering workforce will add **90,000** new jobs.<sup>1</sup> Many more new engineers will be needed to replace those who retire.
- More than two-fifths (**44%**) of A/E and construction firms see a significant shortage of electrical and mechanical engineers as soon as 2014. One-third forecast a shortage of structural and civil engineers by 2014.<sup>2</sup>

## AN EFFECTIVE SOLUTION

### The ACE Mentor Program of America

- Persuades high school students to pursue an engineering career
- Motivates students to study in high school
- Benefits students throughout college
- Diversifies and increases the future engineering workforce

Three years of survey data substantiate these and other conclusions.\*\*



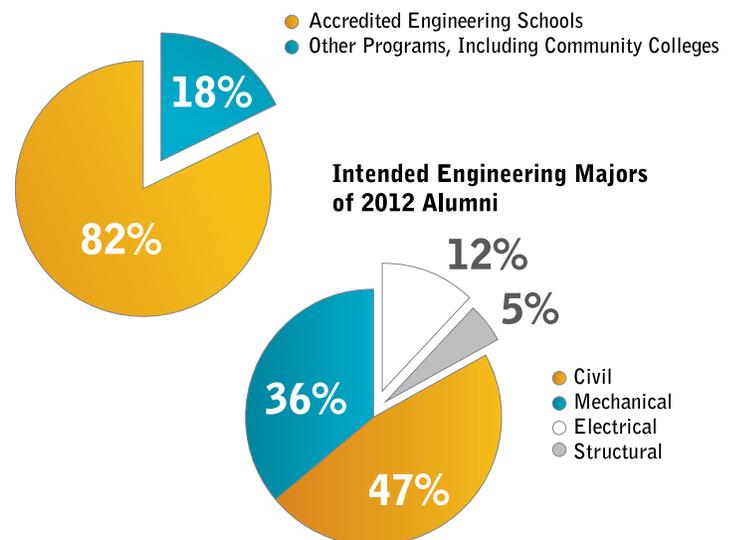
## IMPACT ON STUDENTS IN HIGH SCHOOL

- ACE students learn first-hand information about engineering careers.  
Virtually all (96%) ACE engineering alumni agreed ACE gave them useful information about careers in the design/construction industry, according to three separate surveys of 2009, 2010, and 2011 alumni.
- High school studies become more meaningful for ACE students.  
70% of ACE engineering alumni in 2010 and 2011 agreed ACE made their high school studies more meaningful.
- ACE motivates students to study in high school.  
Almost two-thirds (65%) of 2010 and 2011 engineering alumni agreed their ACE experience increased their academic motivation in high school.
- ACE persuades undecided participants to enter engineering schools.  
Approximately 43% of 2009, 2010, and 2011 alumni expressed some degree of doubt about pursuing engineering before they joined ACE. All of these students entered college with a declared major in engineering.
- In 2012 38% of ACE high school seniors entered 98 accredited engineering schools or other engineering programs.

*“ACE has helped me prepare phenomenally for my first year of university! What I learned through ACE is extremely applicable to my studies here at Cal Poly SLO.”*

— 2011 alumna, freshman, engineering major

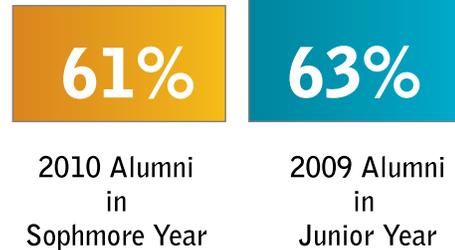
**% of 2012 Alumni Engineering Majors  
by Type of Engineering Program**



## IMPACT ON STUDENTS IN COLLEGE

- ACE gives engineering majors an advantage in their freshman year.  
An overwhelming majority (80%) of 2009, 2010 and 2011 alumni who declared an engineering major believe ACE gave them an edge over their peers.
- ACE continues to benefit engineering majors beyond their freshman year.  
More than four-fifths (82%) of sophomores and juniors in engineering programs agree their ACE experience continues to help them in their studies, according to two spring 2012 surveys.
- ACE alumni in engineering programs maintain high GPAs.

### Percentage with Cumulative GPA of 3.0+ (Spring 2012)



*“Taking part in ACE not only has brought me a lot of relationships, leadership experiences, and skills, but it has also taught me how to listen to people (my teammates) and work more responsibly in a group.”*

— 2012 alumnus, entering freshman year, electrical engineering major.



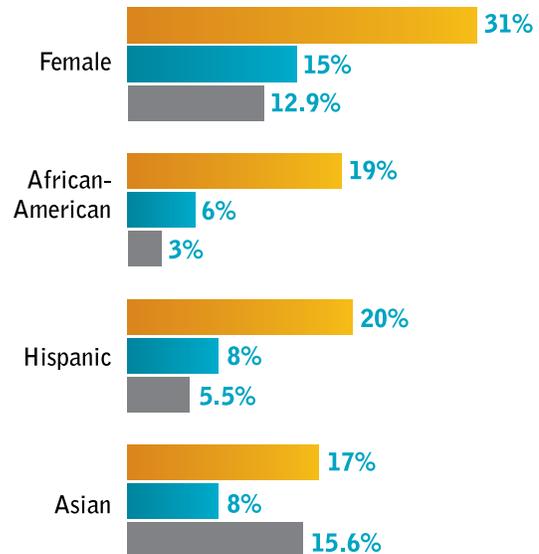
*“ACE changed my perspective about my future. Before ACE, I was unsure what I wanted to do. I had a general idea that it was construction related. After ACE I was 100% sure I wanted to become an engineer. I began attending NYU-Poly pursuing a civil engineering degree.”*

— 2011 alumnus, freshman

## IMPACT ON FUTURE ENGINEERING WORKFORCE

- ACE significantly contributes to greater diversity in the future engineering workforce.
- ACE alumni stick with engineering studies. Only 2 ACE alumni respondents in their sophomore and junior years dropped out of engineering, according to separate spring 2012 surveys. (Comparable national data is not available).
- ACE students learn useful work life skills — teamwork, problem solving, leadership, and communication of ideas. In 2012, nine out of ten (91%) ACE alumni in their freshman, sophomore and junior years of engineering agreed ACE taught them valuable work life skills.
- ACE helps students develop a professional network useful for their future career advancement. Two-thirds (65%) of 2009 alumni in their junior year agreed connections to their mentors give them a valuable network.

## Diversity Compared — ACE, National Freshmen, and National Engineering Workforce (Percentage of Total)



- ACE Alumni Entering Eng. Programs 2012
- National Freshmen Planning Eng. Major 2010<sup>3</sup>
- National Workforce ALL Engineering Fields 2008<sup>4</sup>

*“My ACE experience still has a lot of meaning. I still feel that the knowledge that I’ve gained is invaluable. Plus, my connections with my past mentors likely will make it easier for me to find internships or employment in the future.”*

— 2010 alumnus, sophomore, civil engineering major

\* In this report, the term “engineers” refers to civil, mechanical, structural, and electrical engineers. Approximately 12% of 2012 ACE alumni pursue other engineering fields (e.g., chemical, biomedical, computer, industrial, and aeronautical).

### \*\*ACE Survey Data

1. 2012 Summer Survey of 2012 Alumni (n=1,637). Response rate, 37%; +/- 3% margin of error.
2. 2012 Spring Survey of 2011 Alumni (n=1,766). Response rate, 26%; +/- 4% margin of error.
3. 2012 Spring Survey of 2010 Alumni (n=1,488). Response rate, 19%; +/- 5% margin of error.
4. 2012 Spring Survey of 2009 Alumni (n=1,579). Response rate, 14%; +/- 6% margin of error.
5. 2011 Spring Survey of 2010 Alumni (n=1,488). Response rate, 31%; +/- 4% margin of error.
6. 2011 Spring Survey of 2009 Alumni (n=1,579). Response rate, 20%; +/- 5% margin of error.
7. 2011 Winter Survey of 2009 Alumni (n=1,579). Response rate, 29%; +/- 4% margin of error.

### Notes

- 1) U.S. Department of Labor, Bureau of Labor Statistics, *Occupational Outlook Quarterly*, Spring 2012. [www.bls.gov/opub/ooq/2012/spring/spring2012ooq.pdf](http://www.bls.gov/opub/ooq/2012/spring/spring2012ooq.pdf) accessed September 15, 2012
- 2) McGraw-Hill Construction, *Construction Industry Workforce Shortage*, 2012.
- 3) *The American Freshman National Norms*, Fall 2010 Research Brief published by the Higher Education Research Institute of UCLA in January, 2011.
- 4) National Science Foundation, *Women, Minorities and Persons with Disabilities in Science and Engineering*, Table 9-19 Employed Scientists and Engineers by Sector of Employment, Broad Occupation, Sex, Race/Ethnicity, and Disability Status 2008. [www.nsf.gov/statistics/wmpd/tables.cfm](http://www.nsf.gov/statistics/wmpd/tables.cfm) accessed September 15, 2012