

# National Engineers Week celebrates achievement and appeals to tomorrow's engineers

By Bill Quinan

For Register Special Sections

**T**oday marks the beginning of National Engineers Week, a coalition of more than 75 engineering, professional and technical societies and more than 50 corporations and government agencies.

Co-chairs for National Engineers Week 2007 are the Society of Manufacturing Engineers and Tyco Electronics.

Founded in 1951 by the National Society of Professional Engineers, the goal of the program is to raise public understanding and appreciation of engineers' contributions to society, and to generate interest in engineering and technology careers among young students and promoting pre-college literacy in math and science.

The need to generate interest among today's youth in engineering fields may be particularly apropos in Orange County, based on a report titled "Orange County Workforce 2025," produced by the Orange County Business Council, Southern California Edison and the Orange County, Anaheim and Santa Ana workforce-investment boards.

The report notes that at least one-third of future jobs will demand skills in what are collectively known as the STEM disciplines – science, technology, engineering and mathematics, according to the U.S. Department of Labor. Currently, about 20 percent of undergraduate and graduate degrees awarded by Orange County universities are in the STEM disciplines, indicating that the county may be facing a shortage of these workers.

A variety of programs have been scheduled to help bring the goals of EWeek to fruition.

## Engineering in the classroom

Several programs are included in EWeek that allow for direct participation by schools across the nation.

The National Engineers Week Future City Competition returns for its 15th year as 30,000 middle-school students in 1,100 schools from 38 regions across America work with teachers and volunteer engineers to construct large, tabletop models of cities of tomorrow. The teams presented their Future Cities before engineer judges at regional competitions in January. The first-place teams from qualifying regional competitions earned trips to Washington, D.C. for the Future City National Finals from Feb. 19-21. More information is available at [www.futurecity.org](http://www.futurecity.org).

Through an ongoing program called DiscoverE, more than 45,000 engineers work with 5.5 million students and teachers in elementary through secondary schools each year through classroom visits and extracurricular programs, using educational materials provided by the EWeek coalition.

DiscoverE's 2007 program materials include multimedia activity guides developed from the PBS television programs "Design Squad" and "Cyberchase."

In the National Engineering Design Challenge, high school students apply creativity, science, engineering problem-solving skills and teamwork to help people with disabilities enter or advance in the workplace by overcoming barriers to employment. After competitions across the country, the top five teams went to the national finals Feb. 16 in Washington, D.C. More information on NEDC, sponsored by JETS, can be found at [www.jets.org](http://www.jets.org).

"Visioneering 2007: Designing the Future," an annual event for middle-school students in the Dallas/Fort Worth area, is scheduled for March 31 on the campus of Southern Methodist University. The event will be taped for a later television broadcast to schools nationwide on Channel One. More information is available at [www.theinstitute.smu.edu/visioneering/](http://www.theinstitute.smu.edu/visioneering/).

The Discover Engineering Web site ([www.discoverengineering.org](http://www.discoverengineering.org)) enables middle-school students to discover the how and why of becoming engineers. The site features links to hundreds of related educational, professional and corporate sites.

## Women in engineering

While women account for 46.5 percent of the nation's workforce, according to estimates by the U.S. Bureau of Labor Statistics for 2005, their representation in engineering occupations is noticeably smaller. Women account for an estimated 7.9 percent of electrical and electronics engineers, 5.8 percent of mechanical engineers, 11.7 percent of civil engineers, 11.3 percent of aerospace engineers, 12.7 percent of computer hardware engineers and 15.8 percent of chemical engineers. Women also account for 19.7 percent of engineering technicians.



This is another issue the planners of Eweek intend to address Feb 22 has been designated as "Introduce a Girl to Engineering Day." Thousands of women engineers, with support from their male counterparts, directly mentor more than 1 million girls and young women in grades K-12 with firsthand experiences in engineering.

Another project intended to emphasize the role of women in engineering fields is the "Global Marathon For, By and

About Women in Engineering." The project entails a live Web cast and teleconference, which will run continuously from 9 a.m. (Pacific time) March 22 through 9 a.m. March 23 at [www.eweeek.org](http://www.eweeek.org).

Dozens of presentations and question-and-answer sessions originating from locations across the globe are intended to heighten awareness of science, technology, engineering and mathematics issues among pre-college, college and young career women and to examine issues such as retaining women in college engineering programs and in the workplace

### Hitting the airwaves

Television and radio will play a will be utilized to help bring attention to EWeek and the engineering field in general.

"Design Squad," a new television program that introduces children and families to the engineering design process, will air the first of its 13 episodes on PBS stations nationwide during Engineers Week 2007. "Design Squad" features two teams of high school students who use their problem-solving skills to design, construct and test engineering projects, such as a machine that automatically makes pancakes and a motorized red wagon that can reach speeds up to 20 miles per hour.

More information on "Design Squad" and its educational-outreach program can be found online at [www.pbskids.org/designsquad](http://www.pbskids.org/designsquad).

The popular PBS series "Cyberchase" is also tied into EWeek. A new multimedia activity guide is based on the fifth season of the series and its online counterpart at [www.pbskids.org/cyberchase](http://www.pbskids.org/cyberchase).

Season Five focuses on inventions and how inventive design relies on mathematical skills such as logic, measurement, experimentation, data analysis and visual thinking. "My Big Idea: Cyberchase Inventions" includes activities, a CD-ROM with handouts and graphics, and a DVD with

"Cyberchase" episodes. "Cyberchase" is broadcast on more than 350 PBS stations nationwide, reaching 5 million viewers weekly, including 3 million children ages 2 to 11.

The shows will also be tied into EWeek's Family Day, which was held yesterday at the National Building Museum in Washington, D.C. Family Day will feature activities from "Cyberchase" and "Design Squad," and cast members, including "Design Squad" co-host and mechanical engineer Deanne Bell "Design Squad" high-school contestant Krishana, and the character Digit from "Cyberchase."

More information about family day is available at [eweeekdcfamilyday.org](http://eweeekdcfamilyday.org).

EWeek will also include a "Drive Time Radio Tour" on Feb. 20, in which EWeek chair Rick Peters from the Society of Manufacturing Engineers will be interviewed on radio stations nationwide.

### Recognizing achievements

"New Faces of Engineering" highlights young engineers and their contributions. The program is also intended to provide stimulation and an incentive for college-level and younger students to consider engineering careers.

The program will recognize 15 "New Faces," age 30 and younger, who have worked on projects that impact public welfare or further professional development and growth. The winners will be recognized for their accomplishments in USA Today.

Among this year's "new faces" is Earl Valencia, a systems engineer at Raytheon Co. in El Segundo. Through his job, Valencia has had a hand in some of the most critical defense projects sponsored by the U.S. military, including the design phase of the DDG 1000 Next Generation Naval Destroyer and the Ballistic Missile Defense Radar.

The National Academy of Engineering will present its annual awards, including the \$500,000 Draper Prize, on Feb. 20 at a gala banquet in Washington, D.C. More information is available at [www.nae.edu](http://www.nae.edu).

The Chinese Institute of Engineers will present the Asian-American Engineer of the Year Awards, recognizing outstanding Asian-American professionals in the academic world, public service and corporations, on March 31 in Washington, D.C. Information about the institute is available at [www.cie-usa.org](http://www.cie-usa.org).

The Sightseer's Guide to Engineering, located online at [www.engineeringsights.org](http://www.engineeringsights.org), celebrates engineering marvels from the subtle to the spectacular in all 50 states. The public can also join in the recognition and appreciation of the achievements of America's engineers by submitting their own favorites.

### Engineering-related professional associations in OC area

- AeA – [www.aeanet.org](http://www.aeanet.org)
- American Institute of Aeronautics & Astronautics

- [www.aiaa.org/sections/or](http://www.aiaa.org/sections/or)
- American Institute of Chemical Engineers  
- [www.aiche-orangecounty.org](http://www.aiche-orangecounty.org)
- American Nuclear Society - [www.ans.org](http://www.ans.org)
- American Society of Civil Engineers  
- [www.asceoc.org](http://www.asceoc.org)
- American Society of Civil Engineers, Younger Members Forum - [www.asce-oc-ymf.org](http://www.asce-oc-ymf.org)
- American Society of Heating, Ventilating, Air-Conditioning & Refrigeration Engineers  
- [www.oeshrae.org](http://www.oeshrae.org)
- American Society of Mechanical Engineers  
- [www.asme-oc.org](http://www.asme-oc.org)
- American Society of Safety Engineers  
- [www.ocasse.com](http://www.ocasse.com)
- Association for Facilities Engineering  
- [www.afc6.org](http://www.afc6.org)
- Association for the Advancement of Cost Engineering International, Southern California

- section - [www.aacei.org](http://www.aacei.org)
- Association of IT Professionals  
- [members.aol.com/calsoudpma/](http://members.aol.com/calsoudpma/)
- Association for Women in Technology Inc.  
- [www.awtlocal.org](http://www.awtlocal.org)
- Calif. Society for Healthcare Engineering  
- [www.cshe.org](http://www.cshe.org)
- Consulting Engineers and Land Surveyors of California - [www.celsoc.org](http://www.celsoc.org)
- Institute of Electrical and Electronics Engineers Inc. - [www.ieee.org](http://www.ieee.org)  
Computer Society - [www.ieee-occs.org](http://www.ieee-occs.org)  
Communications Society - [www.coinsoc.org](http://www.coinsoc.org)  
Consultants Network - [www.occn.org](http://www.occn.org)  
Electromagnetic Compatibility Society  
- [ewh.ieee.org/r6/ocs/emc/](http://ewh.ieee.org/r6/ocs/emc/)  
Power Engineering and Industry Applicants Societies of Orange County

- [ewh.ieee.org/soc/pes/orangecounty/](http://ewh.ieee.org/soc/pes/orangecounty/)
- Orange County Engineering Council  
- [www.ocec.org](http://www.ocec.org)
- Orange County Traffic Engineering Council  
- [www.octec-cjb.net](http://www.octec-cjb.net)

*Bill Quinnan is a freelance writer who lives in Orange County. Readers can send e-mail to him at [bquinnan@sbcglobal.net](mailto:bquinnan@sbcglobal.net). Bill cannot provide job leads*

## Employment outlook for top engineering occupations in OC

Occupational Title	Estimated OC employment in 2007	Projected employment in 2012	Projected job-growth rate	Estimated annual job openings	Median hourly wage in OC	Education & training levels
Electrical and Electronic Engineering Technicians	3,270	3,850	17.7	126	\$21.98	Associate degree
Civil Engineers	3,340	4,050	21.3	124	\$34.65	Bachelor's degree
Engineering Managers	3,530	4,010	13.6	118	\$52.25	Bachelor's degree plus work experience
Electronics Engineers, Except Computer	2,870	3,330	16.0	102	\$39.56	Bachelor's degree
Mechanical Engineers	2,490	2,590	4.0	78	\$34.43	Bachelor's degree
Industrial Engineers	1,850	2,050	10.8	65	\$33.05	Bachelor's degree
Civil Engineering Technicians	1,320	1,610	22.0	57	\$26.03	Associate degree
Environmental Engineers	840	1,250	48.8	55	\$30.43	Bachelor's degree
Electrical Engineers	1,980	2,110	6.6	52	\$24.67	Bachelor's degree
Computer Hardware Engineers	1,770	1,970	11.3	49	\$41.91	Bachelor's degree
Electro-Mechanical Technicians	940	1,130	20.2	39	\$14.94*	Associate degree
Industrial Engineering Technicians	970	1,110	14.4	34	\$21.71	Associate degree
Mechanical Engineering Technicians	680	820	20.6	28	\$24.19	Associate degree

*Source: Job outlook and annual wages projected/estimated by the California Employment Development Department. Training levels based on U.S. Bureau of Labor Statistics estimates. Total annual job openings includes new jobs created due to growth and anticipated openings due to people leaving the occupation or the geographic area*

\* EDD wage estimate not available. Estimate from salary.com, assuming 40-hour work week, 52-weeks per year, base pay only.

### Top 10 OC Engineering Firms

- Fluor Corp.
- CH2M Hill Cos.
- Jacobs Engineering Group Inc.
- RBF Consulting
- URS Corp.
- Hunsaker & Assoc. Inc.
- Tetra Tech Inc.
- TRC Solutions Inc.
- Stantec Consulting Inc.
- Fusco Engineering Inc.

*Source: Orange County Business Journal, 2007 Book of Lists*