

CENTER FOR ENGINEERING EDUCATIONAL OUTREACH (CEEEO)

Parent Organization: Tufts University

Web Address: <http://www.ceeo.tufts.edu>

Grade/Age Levels: K-12, college.

Target audiences: Students and educators.

Overview: CEEEO's purpose is to "improve engineering education for all ages" in three core areas - undergraduate outreach programs, tool development program, and education research. The CEEEO brings together teachers, engineers, professors, and other educators to develop curriculum and lesson plans that will create dynamic, inter disciplinary learning environments in K-12 classrooms. Using the model of engineering design projects, the center coordinates the work of experts in engineering and education with teachers to create engineering-based curricula. The CEEEO also creates and supports courses and other opportunities that use innovative methods and materials to instruct college level students. The CEEEO encompasses a large number of programs and projects, including:

- Pre-College for Engineering Teachers Program (PCET), an engineering and technology professional development program designed to help teachers learn how to include engineering in their classrooms through workshops and a summer institute (<http://www.ceeo.tufts.edu/pcet/>);
- The Student Teacher Outreach Mentorship Programs (STOMP), which pairs undergraduate and graduate Tufts engineering students with local K-12 education settings to help integrate engineering and improve teacher understanding of engineering (<http://www.ceeo.tufts.edu/stomp/>), and;
- 4 Schools for WIE, an NSF funded project that forms partnerships between local Massachusetts middle schools, universities and industry to create gender neutral engineering curriculum (<http://engineering.tufts.edu/stemteams/index.html>).

Size of Program: \$1.6 million

Where Offered: Massachusetts

Time Spent by Students: NA

Partners/Sponsors: NSF, IBM, Lockheed-Martin

Format:

- K-12 children and teachers: workshops, institutes, conferences and summer programs.
- College engineering students: co-teaching opportunities and developing tools and curriculum for design and engineering projects.
- Engineering professors: conduct research to inform how children and teachers learn engineering and how to create optimal learning environments for engineering education.

Materials Available on Web and/or Purchase: Lego robotics software, lesson plans, activities. (see website for activity database)

Training – Avail/Required: See overview (above).

Results to Date: Teachers involved in formal outreach programs - 183

Students involved in formal outreach programs - 3750

Teachers participating in our workshop and institutes 75

Students using CEEO's robotics engineering software for the first time 50,000

Teachers participating in educational conferences 260

Overall number of visits to CEEO website(s) - 700,000

Number of downloads from website - 80,000

Number of education research projects on-going - 4

Cost structure: Operating costs for year 2004-05 = \$1.6mil. Breakdown: Labor – 50.75%, Stipends – 13.51%, Outreach activities – 10.84%, Sub-contracts – 6.60%, Materials and equipment – 4.91%, Travel – 3.38%, and Facilities/admin/overhead – 10.01%

Funding: NSF, LEGO, National Instruments, Lockheed, IBM, Raytheon

Other interest point(s): CEEO has 8 staff, 4 consultants, 19 graduate students, 45 undergraduates. See this link for information about specific programs:

<http://www.ceeo.tufts.edu/programs/index.asp>