

Stevens Institute of Technology 2006-2007 Catalog

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The Charles V. Schaefer, Jr. School of Engineering



Center for Innovation in Engineering and Science Education (CIESE)

Beth McGrath, Director <http://www.stevens.edu/ciese>

The Center for Innovation in Engineering and Science Education (CIESE) is a research center dedicated to catalyzing and supporting excellence in the teaching and learning of science, technology, engineering, mathematics (STEM), and other core subjects through innovative, research-based instructional strategies and use of novel technologies.

CIESE collaborates with K-12 teachers, university educators, researchers, policymakers, and educational organizations to develop curriculum materials, conduct professional development programs, and research new methodologies to strengthen STEM education.

CIESE programs have impacted more than 20,000 teachers and a half-million students. CIESE's online classroom projects draw more than 100,000 students from 35 countries each year. These classroom projects, and CIESE's professional development programs, have received accolades from the White House Office of Science & Technology Policy, the U.S. Department of Education, the American Association for the Advancement of Science, the National Council of Teachers of Mathematics, and other organizations. Focusing on the use of "real-time data" and global telecollaborative projects, CIESE curriculum materials engage students in authentic science, mathematics, and engineering investigations, quantitative analysis, critical thinking, and acquisition of 21st century workforce skills.

With funding from the State of New Jersey, CIESE recently launched Phase 1 of "Engineering Our Future NJ," a statewide effort to ensure that all children in New Jersey experience pre-engineering curricula, with a focus on innovation, as a required component of their elementary, middle, and high school education. This first phase is a pilot in which 35 teachers from 32 New Jersey schools have received professional development and are now implementing engineering modules in their classrooms. Phase 2 (scale up and dissemination), with additional support from the Verizon Foundation, will begin in the fall of 2006.

CIESE also leads, in cooperation with the Charles V. Schaefer, Jr. School of Engineering, an initiative known as Research and Innovation in Engineering Education (RIEE). RIEE aims to nurture excellence in teaching and learning at Stevens to more deeply engage undergraduate students in the excitement, creativity, core knowledge base, and problem-solving processes of engineering. Through RIEE, CIESE is supporting faculty in developing and adapting tools and methodologies to increase student learning, engagement, and satisfaction in undergraduate coursework. RIEE resources include seminars, faculty grant programs, joint curriculum development, customized technical assistance, identification of funding opportunities, and a resource web site (<http://riee.stevens.edu>) with informative resources and STEM education news.

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CIESE is managing a variety of grants, including:

- a three-year, \$1.5 million U.S. Department of Education grant to transform teaching and learning in science and mathematics education for preservice teachers through partnerships with 33 community colleges;
- a one-year, \$1 million grant from the State of New Jersey to extend a blended-mode (online and face-to-face) faculty training program to six New Jersey Community Colleges and to establish the Engineering Our Future NJ program;
- several state- and locally-funded teacher training programs aimed at improving teachers' content knowledge, pedagogy, and use of technology to improve student achievement in science and mathematics.

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