



U.S. Model of Practice

National Science Foundation Grants Benefit Academy Students and Communities

As developing nations increasingly educate their workforce in science and technology, the United States must keep pace with the changing nature of the competition. To that end, the National Science Foundation (NSF) has awarded \$3-million grants to several two-year community colleges, some of which are Cisco® Networking Academies®, to help develop the technical knowledge of leaders and maintain U.S. economic competitiveness.

“The ATE centers respond to national industry needs by equipping students with key skills required to excel in high-tech workplaces, increasing enrollment in educational programs that serve critical sectors, and serving as clearinghouses for exemplary instructional material and professional development tools,” says Arden L. Bement Jr., Director, NSF.

The NSF project grants support Advanced Technological Education (ATE) initiatives, which focus on enhancing technician and teacher education, technical expertise, students’ laboratory experiences, and applied research. Projects use multifaceted approaches to add rigor to Science, Technology, Engineering, and Math (STEM) courses; infuse industry standards and workplace competencies into classroom instruction; and provide educators with opportunities for professional development. The NSF grants also support ATE centers, which serve as change agents in their fields through strategic partnerships with regional and national employers.

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NSF is an independent federal agency that supports fundamental research and education across all fields of science and engineering. For more information about NSF, visit <http://www.atecenters.org/>

ATE Centers That Are Making A Difference

CREATE: Santa Clarita, CA, www.create-california.org

The California Regional Consortium for Engineering Advances in Technological Education (CREATE) project is a joint effort between six community colleges, five universities, and more than 50 high-tech engineering and technology employers. Since 1997, the CREATE ATC consortium has offered a regional approach to workforce preparation and training by creating innovative, flexible strategies that teach students about the latest technological advances in a range of high-demand technology fields.

As a Cisco Academy Training Center (CATC), CREATE offers instructor training for Cisco CCNA® courses, Cisco CCNP® courses, and the Network Security curriculum in a train-the-trainer model. CREATE’s instructional skills and pedagogy workshops enhance the quality of teachers who deliver Networking Academy courses in the community college setting. “We’re not just training teachers to teach the curriculum, we’re helping them become better teachers through professional development,” says Kathy Alfano, Executive Director, CREATE. “They’re learning how to create structured lessons, address various learning styles, and motivate their students while teaching rigorous content.”

CREATE's impact on pedagogy training spans beyond California, with regional hubs offering workshops in 14 states across the nation. "To help keep our costs down," says Alfano, "we're piloting a program with NSF to develop 'master trainers' who can train groups of facilitators to broaden our program reach and offer more learning opportunities to teachers."

CREATE's technology courses are offered to students for credit and are pathways into degree programs at various 4-year institutions in the region, including five California State University campuses. Since 1999, CREATE has helped educate more than 20,000 students, developed and implemented 30 new degree programs and 105 new courses, and facilitated more than a million dollars in additional funding through innovative industry and college partnerships.

CyberWATCH: Washington, D.C. Area, www.cyberwatchcenter.org

In 2005, to address the growing demand for cybersecurity technicians throughout metropolitan DC, NSF awarded a \$3-million grant to establish a virtual regional center called CyberWATCH, which stands for Cybersecurity: Washington Area Training and Consortium Headquarters. The center consists of members from the Metropolitan Council of Governments, five Cisco Networking Academy high schools, and several other higher-education institutions that contribute to the development of a skilled workforce in computer and Internet security.

Prince George's Community College, a regional academy, provides leadership and coordination among the seven CyberWATCH community colleges involved in the consortium, including the development of two model curricula for information assurance and information security. "We've agreed to adapt and adopt one model among all the institutions so students can have a clear and seamless pipeline when pursuing a degree in this field," says Dr. Vera Zdravkovich, Director, CyberWATCH.

The cybersecurity curriculum leverages Networking Academy courses, which provide real-world activities and virtual labs, and can lead to industry-recognized certification. In addition, it maps to National Security Administration (NSA) standards and articulates to the five CyberWATCH university partners, including George Mason University, George Washington University, Towson University, University of Maryland College Park, and Johns Hopkins University.

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As cybersecurity rapidly becomes an essential function in virtually every field, CyberWATCH is working to infuse its materials into a broad array of disciplines offered at its institutions, including science, economics, political science, business, and law. To address the limited pool of instructors currently trained in cybersecurity, the Center is offering a graduate program to 15 faculty members for certificates in information assurance and information security, which will help increase the instructional capacity in the region.

"I think it's amazing what can be accomplished by such different institutions when there is strong collaboration, commitment, and a unifying goal," says Dr. Zdravkovich.

Center for Systems Security and Information Assurance (CSSIA): Palos Hills, IL, www.cssia.org

CSSIA is an NSF-supported consortium consisting of seven academic institutions in five states that are dedicated to meeting the needs of the evolving information technology (IT) industry, particularly as it relates to the field of cybersecurity. Led by

Moraine Valley Community College, a CATC, CSSIA is the first comprehensive IT security center in the Midwest and has become a national leader in cybersecurity and information assurance training. As an integral part of the Moraine Valley Community College CATC, CSSIA offers advanced technology training programs to community colleges, university faculty, and students to address the need for highly-qualified IT security professionals.

The CSSIA center has developed nine undergraduate courses, nine graduate courses, and a variety of workshops that address IT security. By forming strategic partnerships with organizations such as Cisco, Grant Thornton, Ascendant Learning, CompTIA, and Illinois Working Connections, CSSIA has gained access to numerous sources of curriculum content and work-based learning opportunities to meet its specific needs including customized educational programs for faculty and business professionals, remote IT security labs, student internships, and faculty externships. In addition, the center offers support to educational institutions regarding curriculum mapping and state processes for course and program approvals.

John Sands, IT Professor at Moraine Valley, says, “The NSF grant allows us to provide extraordinary opportunities for minority and female students who are interested in careers in IT. Through partnerships with inner-city schools such as Mirta Ramirez Computer Charter School, high school students can participate in college courses taught by college professors. Students from Mirta Ramirez have taken classes in IT Essentials, Fundamentals of Wireless LANs, and Network Security. These students also traveled to Washington, DC to receive recognition from NSF for community service as part of the annual NSF ATE conference.

According to principle investigator Erich Spengler, “CSSIA has had tremendous impact on capacity building in the area of information assurance.” CSSIA has offered approximately 100 workshops, serving more than 1200 college and university faculty from across the nation. Course offerings range from entry-level topics to advanced IT security and emerging technologies. Many of these classes prepare faculty members to teach and earn industry-based certifications. The center’s classes are designed to provide a comprehensive learning experience including course content, teaching techniques, lab management, and student assessment.



Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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