



**Strengthening Institutional Capacity,
Promoting Education Excellence, &
Broadening Pathways to Success**

Community Colleges 2007-08

Directorate for
Education and
Human Resources
(EHR)
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The Viticulture and Enology Science and Technology Alliance (VESTA) students at work
Credit: Dale Law

Broadening Participation to Improve Workforce Development

EHR Program	Awardee
Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP)	Clinton Junior College; Rock Hill, SC
Research in Disabilities Education (RDE)	Springfield Technical Community College; Springfield, MA

Clinton Junior College, a Historically Black College, is adding an Associate of Science Degree to its exiting programs through the *Targeted Infusion Project*. It will strengthen the mathematical and science foundation of the students who are interested in pursuing a degree in STEM fields or planning to matriculate to four-year institutions. Agreements will also be formed with at least two four-year institutions for transferring Clinton College students with this degree.

Springfield Technical Community College, together with Greenfield Community College and Quinsigamond Community College, is implementing the Universally Designed Learning Communities (UDLC). The project is designed to investigate the effective instructional methods and practices for people with disabilities in STEM.

Enriching Education of STEM Teachers/Faculty

Course, Curriculum, and Laboratory Improvement (CCLI)	Baton Rouge Community College; Baton Rouge, LA
	Middlesex Community College; Bedford, MA
	San Mateo County Community College District; San Mateo, CA

Baton Rouge Community College is implementing a series of faculty development workshops (STAR Mini-institute) throughout the state of Louisiana to develop a community of biology faculty who are trained in scientific approaches to teaching. Participants in the mini-institutes are sharing their experiences with other faculty at their institutions and maintaining their involvement through various mechanisms. The broad impact extends to the large number and diversity of students being taught by the participating at thirty target institutions, including six HBCU's and a number of community colleges.

Middlesex Community College's Mathematics Across the Curriculum (MAC) project provides training and capacity-building opportunities for a total of 60 faculty from its own institution and other two-year colleges and high schools. Project activities include one or more of the following: (1) faculty mentoring; (2) curriculum design; (3) service learning/civic engagement initiatives; and (4) design of the interdisciplinary learning communities.

San Mateo County Community College District aims to improve student success by building the capacity of faculty through the Biology Curriculum Enhancement Project (BioCEPT). The activities incorporate the established models known to advance teaching and learning in undergraduate science. Those models are being adapted to the community college context to implement course and laboratory enhancements and to increase access to innovative instructional technology.

Note: The selected projects in this document are representative of the active community colleges awards made within 2007-2008, based on the information from the NSF Fastlane System, as of July 16, 2008. The purpose of this document is to present how some community college projects are operating within the thematic framework of EHR's awards portfolio.

Transforming Learning through Research & Evaluation

EHR Program	Awardee
Course, Curriculum, and Laboratory Improvement	Joliet Junior College; Joliet, IL

Joliet Junior College is providing a model pathway to the adoption of research-based curricula. Researchers are creating a large collection of easy-to-administer, ready-to-use classroom and student-tested education materials intended to enhance the conceptual understanding of basic mechanics in the introductory physics course. This project facilitates the adoption of research-based educational materials, which provides means for the individual faculty to make incremental changes to their instruction, thereby improving physics instruction and student learning.

Seattle Central Community College, California State University Monterey Bay, and Dartmouth College are developing a mathematical biology course, text and supporting interactive software to enrich and enhance non-math majors' learning experiences. A formative evaluation is being conducted to ensure that the materials are revised in real-time to meet the needs of a diverse student body. The combination of a compelling subject, an undergraduate research experience, and an interactive technology-based classroom experience serves as a useful prototype for mathematical education of STEM majors.

Promoting Cyber-Enabled Learning to Enhance STEM Education

Advanced Technological Education (ATE)	Awardee
Course, Curriculum, and Laboratory Improvement (CCLI)	Alabama Southern Community College; Monroeville, AL Everett Community College; Everett, WA

Alabama Southern Community College is partnering with Auburn University and Charter Member Colleges to develop the National Center for Pulp and Paper Technology. The mission involves establishing and perpetuating a technology program to provide students around the nation with exciting and effective training and education opportunities, and to cultivate a globally competitive, technologically advanced workforce for the pulp and paper industry. The center developers are also working to ensure that the activities have provisions to recruit students from groups that have been traditionally underrepresented in the pulp and paper industry workforce.

Everett Community College is engaging undergraduate biology transfer students in meaningful active learning through guided-inquiry, problem-based activities using computer simulation software and computer modeling. Sophisticated molecular biology labs are being added to the curriculum. Expected student outcomes include (1) demonstration of scientific literacy; (2) improved attitudes towards learning science; (3) increased ability to apply mathematics to address biology issues; and (4) awareness of the personal and professional usefulness of mathematics and modeling.

Advancing Career Development Opportunities

Program	Awardee
Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)	Des Moines Area Community College; Ankeny, IA
NSF Scholarships in Science, Technology, Mathematics and Engineering (S-STEM)	Community College of Baltimore County; Essex, MD

Des Moines Area Community College, partnering with Iowa State University (ISU), is developing a new learning community model called a learning village, or meta-community, to increase the number of students graduating with a bachelor's degree in engineering at ISU and the number of students in STEM areas of study at DMACC. The model incorporates various learning communities as well as service learning projects for engineering students in the second and third year of study. The first-year and gateway courses are revised to better engage students, to provide flexibility, and to support transfer students. Student-centered advising make students more aware of the various pathways to the completion of an engineering degree, including transfer from a community college.

The **Community College of Baltimore County** awards 20 scholarships annually and provides multiple services to promote full-time enrollment and degree attainment in STEM disciplines by eligible students. The project aims to: (1) recruit, graduate and transfer an increased number of STEM students, especially women and underrepresented minorities, (2) provide awardees with academic, career and professional development opportunities; and (3) develop relationships with four-year institutions to facilitate awardees' transfer.

Furthering Public Understanding of Science and Advancing STEM Literacy

Program	Awardee
Informal Science Education (ISE)	Madison Area Technical College; Madison, WI

Madison Area Technical College is refining and evaluating the effectiveness of the Fusion Science Theatre (FST) as an ISE teaching model. FST is a combination of theatre, science demonstrations and participatory components. To provide proof-of-concept that the model is transferable, an independent interdisciplinary team from the University of Wisconsin, Madison Biotechnology Center will produce their own FST event to compare with the existing FST program.