

PROGRAM SUMMARY

Problem: The State of Georgia has a pressing need for science, technology, engineering, and mathematics (STEM) graduates to ensure the future success of its workforce. There also exists a demand to improve the quantity and quality of the State's P-12 science and mathematics teachers.

Solution: The University System of Georgia's (USG) STEM Initiative works to increase the number of students prepared for and enrolled in STEM degree programs. It also seeks to improve academic performance and success rates in these fields, as well as support P-12 science and mathematics teacher preparation.

KEY POINTS

- Provides USG grants to colleges and universities selected through a competitive process.
- Supports institutional development of comprehensive programs, which include mini-grant programs, service learning opportunities, undergraduate research programs, and piloting of instructional technology.
- Utilizes best practices established through Georgia PRISM, Academy for Future Teachers, Fostering Our Community's Understanding of Science (FOCUS) and Mathematics, Engineering, Science Achievement (MESA).
- Identifies and promotes successful evidence-based practices in postsecondary STEM instruction.

OVERVIEW

The USG STEM Initiative is a project designed to improve student access and success in the STEM fields and enhance existing instructional capabilities of STEM faculty in Georgia's postsecondary institutions. The Initiative, launched in 2007, is led by the **Office of Educational Access & Success (OEAS)**. The USG STEM Initiative builds upon and advances other OEAS-led efforts, including the Georgia PRISM project. Since the program's inception, 13 USG institutions have participated.

GOALS

The STEM Initiative works aggressively with USG institutions and P-12 partners to increase:

1. The number of P-12 students who prepare for and are interested in majoring in STEM in college,
2. The success rates (retention, progression, and graduation) and number of students in college who pursue the STEM disciplines, and
3. The number of teachers who are prepared in science and mathematics.

2011-2012 PARTICIPATING INSTITUTIONS

- Columbus State University
- Georgia College & State University
- Georgia Gwinnett College
- Georgia Perimeter College
- Georgia State University
- University of Georgia
- University of West Georgia

STEM CONFERENCE

In Spring 2012, Georgia Southern University will host a Scholarship of STEM Teaching and Learning Conference. Drawing upon the expertise of the STEM Initiative partners and involving all USG institutions, the conference to disseminate information across USG institutions will focus on advancing promising practices and innovative methods for STEM pedagogy. Conference learning opportunities will be extended through web-based resources and tools, including webinars and social media.



APPROACHES TO IMPROVING STEM OUTCOMES

Institutions in the USG STEM Initiative have explored a number of innovative approaches to realize the goals of the project. Notable initiatives include:

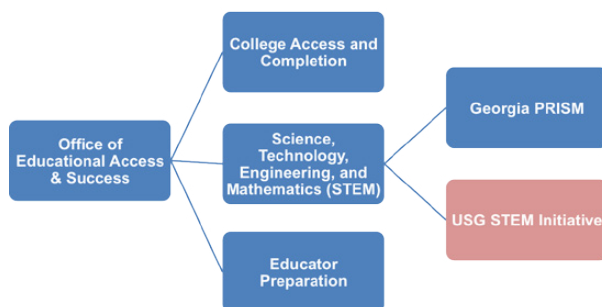
- **Faculty mini-grants** – Faculty undertake research and demonstration projects that investigate novel approaches to improve STEM pedagogy and student learning outcomes. Projects are designed to be outcomes-oriented, with an emphasis on disseminating results. A number of campuses have specific focuses for their mini-grant programs, including STEM teaching administration (homework, course management software), instructional technology, undergraduate research, and teacher preparation.
- **Project FOCUS** – Fostering Our Community's Understanding of Science (Project FOCUS) is an initiative of the University of Georgia and Clarke County School District to improve elementary science instruction. Project FOCUS partners university science majors with elementary school teachers in public schools to teach science to children in grades K-5. Other USG STEM Initiative institutions have adapted project FOCUS for their respective communities throughout Georgia.
- **Georgia MESA Program** – The Mathematics, Engineering, Science Achievement (MESA) program is an academic preparation program that assists educationally disadvantaged students to excel in mathematics and science. Based at the USG's two-year colleges, MESA helps prepare students for completion of baccalaureate degrees in STEM.
- **Academy for Future Teachers** – The Academy for Future Teachers (AFT) is an initiative first launched at Georgia State University to attract and train talented and diverse high school students who are considering a career teaching math or science in an urban environment. Participating juniors and seniors focus on math and science concepts within a college setting as they acquire teaching and tutoring skills.

Other key elements of STEM Initiative projects include:

- Supplemental instruction (SI) programs
- Peer mentoring
- Learning communities
- Undergraduate research experiences
- Courses on STEM careers
- Deployment of instructional technology
- Service learning opportunities
- Enhancements to STEM teacher preparation

KEY INDICATORS AND MILESTONES

- Increase in STEM majors among participating institutions from 12,972 in FY 2007 to 16,559 in FY 2010—an increase of 3,587 majors, or **27.7 percent**.
- Increase in STEM degrees among participating institutions by 11.3 percent from 2007 to 2011.
- Improvements in passing rates for STEM core courses at participating institutions, ranging from 2.4 percent (mathematics) to 6.6 percent (physics).



CONTACT INFORMATION

Dr. Kamau Bobb serves as USG STEM Initiative Coordinator and is responsible for program oversight and management, as well as assessment and reporting. For more information about the STEM Initiative, please contact Dr. Bobb at: kamau.bobb@usg.edu.