The UGA Office of STEM Education (OSE) serves University professors and K–12 teachers to improve the teaching and learning of Science, Technology, Engineering, and Mathematics.
WHAT IS STEM?

As people, we must work in harmony with the natural world to improve human health and happiness: ensure food and shelter, provide safety from weather and natural disasters, cure illness, and create entertainment.

- **SCIENCE**
  The study of our natural world (laws, reactions, relationships, ...)

- **TECHNOLOGY**
  The *things* we have created (iPhones, electric cars, heart valves, ...)

- **ENGINEERING**
  The process of using knowledge of science to produce solutions

- **MATHEMATICS**
  A language for modeling and reasoning

---

ACADEMICS

PROFESSIONAL DEVELOPMENT SCHOOL DISTRICT (PDSD)
Leveraging the existing PDSD partnership with the Clarke County School District, College of Education faculty and in-service and pre-service teachers will focus on strengthening the teaching of math and science using an inquiry model with middle and high school students.

SCALE-UP CLASSROOMS AT THE NEW SCIENCE LEARNING CENTER
Adopted on campus in 2012 by Physics, the number of these active learning spaces has grown annually with two large classrooms included in the new Science Learning Center opening in Fall, 2016.

SPOTLIGHT ON PDSD BY THE NUMBERS
- 13 school sites
- 23 college courses taught on-site
- 10 Professors-in-Residence
PEER MENTORING
Building upon successes in select STEM courses, six STEM disciplines will implement various peer mentoring models into gatekeeper courses over the 2016–17 academic year to improve student performance and retention.

ADVISING
The new one-stop advising center, dozens of new advisors, utilization of improved tracking and predictive analytics, and expanded career planning will enhance the support provided to students who are considering or currently pursuing STEM degrees.

SPOTLIGHT ON PS-LSAMP
The Peach State Louis Stokes Alliance for Minority Participation (PS-LSAMP) works to increase the number of underrepresented students in STEM. Upperclassmen serve as peer mentors to provide academic and social support.

PARTNERSHIPS WITH INDUSTRY
Industry partnerships contribute real-world course components that result in the development of essential and expected job knowledge and skills.
OUTREACH

PROJECT FOCUS
Established in 2002 as a partnership across many UGA units and the Clarke County School District, Fostering Our Community’s Understanding of Science (FOCUS) continues to provide teaching and service opportunities for undergraduate STEM majors and to expand the lesson plans for elementary and middle school teachers.

SPOTLIGHT ON PROJECT FOCUS 2016
- K-12 Students ———— 2500
- UGA Students ———— 119
- K-12 Schools ———— 8

ROBOTICS
Learning through doing is what these robotics partnerships are all about. Students learn about real-life applications of robotics while building and experimenting with their own creations. Examples of existing partnerships include:

- UGA College of Education, Barrow County School District, and RoboRobo partner to integrate robotics into K-12 lesson plans.
- UGA College of Engineering and FIRST Robotics partner to support and facilitate exciting robotics competitions in Athens and at UGA.

Image: ‘Flying Lemur EV3 Robot’ by David Luders, https://www.flickr.com/photos/42988571@N08/17501651501. License at http://creativecommons.org/licenses/by/2.0.
RESEARCH

SEER (SCIENTISTS ENGAGED IN EDUCATIONAL RESEARCH)
SEER facilitates cutting-edge research in STEM education through multi-disciplinary interactions and research collaborations among scientists from different UGA colleges and departments.

ENGINEERING AND EMPATHY
With funding from OSE mini-grants, faculty from Engineering and Social Work at UGA explore the role of empathy as a core competency for engineering students. This initial work formed the foundation for a much larger National Science Foundation award.

MUVES (MULTI USER VIRTUAL ENVIRONMENTS)
The UGA Departments of Geography and Anthropology are conducting exciting research on increasing diversity in STEM disciplines via the use of Multi-User Virtual Environments such as Minecraft.
Georgia will demand nearly 200,000 STEM jobs by 2018

- Up from 168,650 in 2008
- STEM jobs will be 4% of all GA jobs in 2018
- Computer occupations will account for 57% of STEM jobs in Georgia by 2018

**National Trends in STEM Jobs**

- STEM jobs are projected to increase by 17% by 2018
- International Competition: Only 19% of U.S. bachelor’s degrees are awarded in STEM fields, while in China over 50% of first degrees are awarded in STEM fields.

---

“Advances in science, technology, engineering, and mathematics (STEM) have long been central to our Nation’s ability to manufacture better and smarter products, improve health care, develop cleaner and more efficient domestic energy sources, preserve the environment, safeguard national security, and grow the economy.”

**FEDERAL SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) EDUCATION 5-YEAR STRATEGIC PLAN**

---

The Office of the Vice President for Instruction: Office of STEM Education

www.ose.uga.edu