

# Center for Mathematics and Science Education



**AS ONE OF THE STATE'S MOST PROMINENT SCIENTIFIC EDUCATION RESOURCES, WE ARE ALSO ONE OF ITS LEADING PROPONENTS OF PUBLIC EDUCATION REFORM.**

*Our Center for Mathematics and Science Education is dedicated to supporting the ever-changing needs of Texas public educators charged with the vital role of teaching K-16 science and mathematics.*

*Since 2001 the CMSE has conducted more than \$22 million in private, state, and federally funded research to benefit K-16 education.*

**COLLEGE OF SCIENCE**  
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The Center for Mathematics and Science Education (CMSE) at Texas A&M University, established in 1985, is a collaborative effort between the College of Science and the College of Education and Human Development to provide and promote resources that enhance science and mathematics education in the State of Texas.

## **TEACHER RECRUITMENT, RETENTION, AND PREPARATION**

Local, state and national trends indicate an increasingly high need for qualified math and science teachers. To address this shortage, we offer several pathways and incentives to recruit the next generation of teachers. Texas A&M proudly leads the state in university-trained math and science teacher production<sup>1</sup>.

### **aggieTEACH**

This undergraduate secondary math and science teacher preparation program produces highly qualified, highly effective STEM (science, technology, engineering, mathematics) teachers by targeting students interested in obtaining both a STEM degree and a secondary math or science teaching certification within the traditional four-year, 120-hour undergraduate bachelor's degree. Students are mentored by some of the area's best secondary STEM teachers and benefit from STEM teaching seminars, advising sessions, and scholarships, including the prestigious NSF Robert Noyce Teacher Scholarship Program (up to \$10,000 per year).

### **Accelerate Online**

[http://tlac.tamu.edu/articles/accelerate\\_online](http://tlac.tamu.edu/articles/accelerate_online)

### **Middle Grades 4-8 Math & Science**

[http://tlac.tamu.edu/articles/undergraduate\\_degree\\_options](http://tlac.tamu.edu/articles/undergraduate_degree_options)

### **Post-Baccalaureate (Masters Level)**

[http://tlac.tamu.edu/articles/secondary\\_certification](http://tlac.tamu.edu/articles/secondary_certification)

## **STEM TEACHER PREP ACADEMY**

This program, funded with a Texas Higher Education Coordinating Board (THECB) grant, seeks to increase the quantity and quality of certified middle school and secondary math and science teachers through a high-quality, rigorous curriculum featuring cutting-edge technology, STEM-focused content, and intense in-service teacher interaction.

## **PROFESSIONAL DEVELOPMENT**

The CMSE is committed to offering high quality, sustained professional development for math and science teachers.

## **ADVANCED PLACEMENT® INSTITUTES**

A longstanding A&M tradition, our AP workshops are led by university math and science faculty and experienced AP consultants in chemistry, math, biology, physics, and statistics. These institutes bring teachers up-to-date in their subjects and introduce them to new ways to present the material in their classrooms.

## **USDA FUTURE SCIENTISTS INITIATIVE**

This program introduces United States Department of Agriculture research into local schools (Grades 5-8) and communities with hands-on, inquiry-based activities designed to inspire future agricultural scientists. For more, visit <http://futurescientists.tamu.edu>.

## **TEXAS REGIONAL COLLABORATIVE FOR EXCELLENCE IN SCIENCE TEACHING**

Established at Texas A&M in 2005, this program provides valuable leadership in science education for Brazos Valley teachers, enabling 31 in the past year to become Science Teacher Mentors in their schools as well as at the district, regional, and state levels. Each completed ~121.2 hours of professional development, while 107 additional Cadre Mentors logged ~40.1 hours apiece.

## STEM TEACHER SUMMIT

This day-long annual conference jointly hosted with the Dwight Look College of Engineering provides Texas teachers with eight hours of valuable continuing education credit and beneficial exposure to current science and engineering at a Research One university. Participants also receive project ideas and materials to use in their classrooms. For more: <http://stemsummit.tamu.edu/>.

## G-CAMP

G-Camp is a two-week field camp for science teachers (Grades 4-12) that gives first-hand experience with geology principles while helping to develop new classroom curriculum. Participants travel through Texas, New Mexico, and Colorado, thanks to funding from a consortium of petroleum industry partners and Texas A&M. Teachers across Texas are encouraged to apply, with a focus on economically disadvantaged schools. <http://g-camp.tamu.edu/>.

## TEACHING AND LEARNING RESEARCH

We support scientific research in education that enables administrators, policy makers, educators and other stakeholders to make informed decisions about teaching and learning, curriculum, instruction, and assessment.

## EFFECTIVE INSTRUCTION STRATEGIES FOR SCIENCE

This CMSE-developed booklet offers descriptions of research-based strategies proven to effectively teach K-12 science in ways that support and nurture student learning. Strategies are ar-

anged in order of effectiveness (greatest to least), and each is accompanied by a description and examples of how it may be used. The booklet is useful as a reference, inspiration for new teaching strategies, and affirmation of current classroom techniques.

## POLICY INITIATIVES

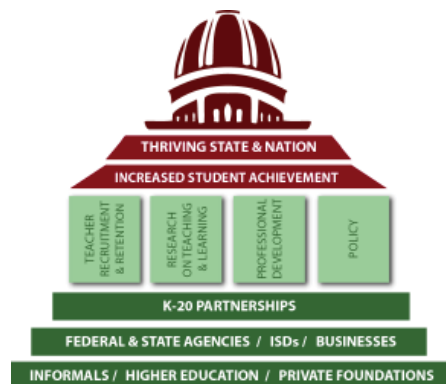
Given the constantly changing nature of Texas policy, economics, demographics, and education, the CMSE works to play a central role in the development of effective policy and practice to benefit today's math and science teachers and their students.

## POLICY RESEARCH INITIATIVES IN SCIENCE EDUCATION (PRISE)

Through this NSF-funded program, we are creating a model of continuous professional development that improves the quality of science teaching as it reduces the current shortage of qualified high school science teachers. For more details, go to <http://prise.tamu.edu>.

## TEXAS A&M UNIVERSITY BIOLOGY COLLEGE AND CAREER READINESS STANDARDS (BCCRS) SYMPOSIUM

This CMSE symposium paired secondary science educators/administrators with higher education faculty/administrators, offering them an overview of college and career readiness standards (CCRS) and hands-on lessons specifically aligned with the CCRS for biology. Attendees discussed implementation plans for BCCRS integration into core secondary and college science courses. Pre- and post-assessments were analyzed to gauge effectiveness. <http://www.science/tamu.edu/bccrs>.



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## ABOUT THE COLLEGE

The College of Science at Texas A&M University takes great pride in providing the highest quality science education, scholarly research, and technical expertise to the people and industries of Texas and the nation. Through five departments and many interdisciplinary centers and institutes, we advance discovery and solve real-world problems while producing the next generation of scientific leaders and technologies and playing a key role in helping Texas A&M succeed in its mission to become one of the nation's top 10 public institutions by the year 2020.

## QUICK FACTS

- Five departments (Biology, Chemistry, Mathematics, Physics & Astronomy, Statistics)
- 27 degree programs — 16 bachelor's, 4 master's, 7 doctorates
- 2,376 undergraduate majors
- 277 tenured/tenure-track faculty (14% of total)
- \$65.7 million/year in research
- ~48% of A&M distinguished professors
- U.S. leader in minority & female Ph.D.s
- Teach 20% of total A&M semester credit hours

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<sup>1</sup> Texas State Board for Educator Certification