

# EARLY STEM INITIATIVES

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The Center for Mathematics and Science Education at the University of Mississippi has a mission to improve mathematics and science education in Mississippi by fostering interaction between academic and K-12 education communities, supporting the implementation of research-based methods in the classroom, and promoting interest in science, technology, engineering, and mathematics (STEM) fields. The CMSE is actively involved in supporting early STEM learning through a variety of opportunities for teachers and students. Some of these initiatives are highlighted within this document.

## Astronomy Week



The vision of the Center for Mathematics and Science Education Astronomy Week is to bring minds-on/hands-on activities and innovative experiences to Mississippi's schools. The curriculum includes four pre-planned lessons designed to be implemented over the course of two weeks and culminate with an immersive experience in the CMSE's portable Starlab digital planetarium on Friday of the second week. These activities and experiences are designed to provide students the opportunity to "try on" the identity of an astronomer. Students will make discoveries similar to those made by famous astronomers of the past, utilize scientific practices, and create viable arguments to support their findings.

The mobile planetarium has traveled across the state of Mississippi to a variety of audiences, including pre-schools, daycare centers, K-12 schools, science museums, and community outreach events. By providing students with a planetarium experience and providing resources to parents on how to engage in STEM at home, the CMSE hopes to inspire a new generation of Mississippi scientists. Since 2013, over 12,500 students, teachers, and families have visited the mobile planetarium. The mobility of this program allows students from the most rural areas of Mississippi a unique look into our solar system.

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## UM STEM Excursions

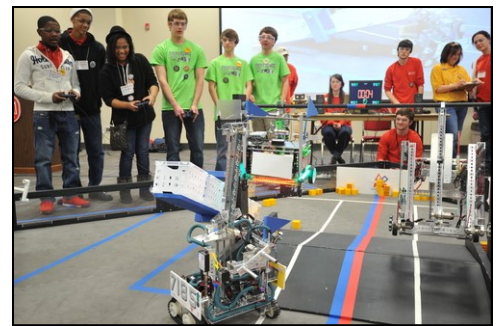


In partnership with the Physics and Engineering departments at the University of Mississippi, the CMSE coordinates the UM STEM Excursions. These excursions are field trips for K-12 students to visit the university campus and interact with STEM faculty through tours, physics demonstrations, and student activities led by CMSE graduate research fellows. The CMSE has invested in STEM learning kits that are available for teacher checkout for use during the STEM excursions and also in the classroom. In addition to on-campus tours, the CMSE also coordinates classroom visits by STEM ambassadors, a service group comprised of university faculty and graduate

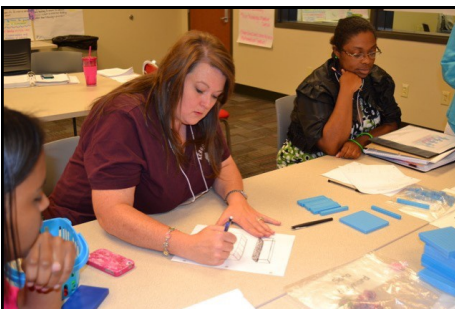
students, to provide interactive demonstration lessons in area classrooms.

## Robotics in the STEM Classroom

The CMSE offers teacher workshops on incorporating robotics as a tool for learning in science, mathematics, gifted, and STEM classes. For teachers of grades 2-4, training and classroom kits are provided that utilize the LEGO® WeDo Construction sets. For grades 3-9 teachers, the CMSE partners with a non-profit organization, Mississippi Robotics, to offer training and curriculum materials to teachers across Mississippi. The goal of these trainings is to ignite excitement about engineering and robotics in young learners that will fuel their imaginations to pursue these areas further in high school, college, and career.



## Professional Development



The CMSE aims to improve STEM education by offering professional development through workshops, conferences, and institutes for teachers of mathematics and science. All CMSE professional development opportunities engage classroom teachers in hands-on, research-based tasks and instructional strategies that are aligned with state and national curriculum standards. The goal of the CMSE Professional Development Division is to aid teachers in developing a student-centered classroom environment that fosters conceptual understanding of mathematics and

science. Since 2011, over 1800 teachers of primary and elementary grades have attended CMSE professional development events.

## Teacher Resources

A variety of classroom manipulatives, technology, and STEM kits are available through the CMSE online checkout system. These resources are free of charge to provide equal access to quality materials for all students.



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