STEM Accelerator Program

College of Science

George Mason University

The STEM Accelerator program was created by the George Mason College of Science in 2011 to focus on the success of undergraduate students. In particular, the Accelerator works to:

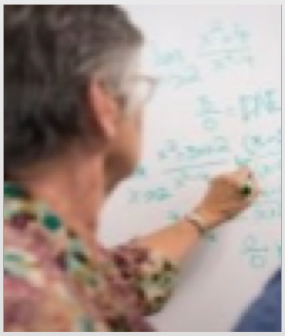
- increase the number of STEM majors,
- improve retention rates of STEM students,
- reduce the time to graduation,
- help STEM graduates join the workforce or continue their education.

This interdisciplinary unit consists of full-time faculty from Mathematical Sciences, Biology, Physics & Astronomy, Forensic Sciences, Geology, and Chemistry. During the academic year the faculty are 50% with their department and 50% with the STEM Accelerator, in the summer they are fully dedicated to the STEM Accelerator. Besides teaching, these coordinate and promote STEM activities aligned with the mission of the STEM Accelerator.

Jessica Rosenberg
Acting Director
Physics & Astronomy
- Education research
- Faculty development

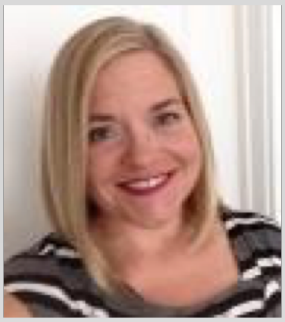
Ben Dreyfus
Physics
- Learning Assistant Seminar
- Physics Education Research

Kelly Knight
Forensic Science
- FOCUS Summer Camp
- K-12 STEM Outreach



Mary Nelson
Math
- Math Counts
- Math and STEM Boot Camps

Julia Nord
AEOS
- Gem Mineral & Fossil Show
- Experiential Learning



Rebecca M. Jones
Chemistry
- COS Underg Rsrch Colloq
- STEM/Chem Ed. Research

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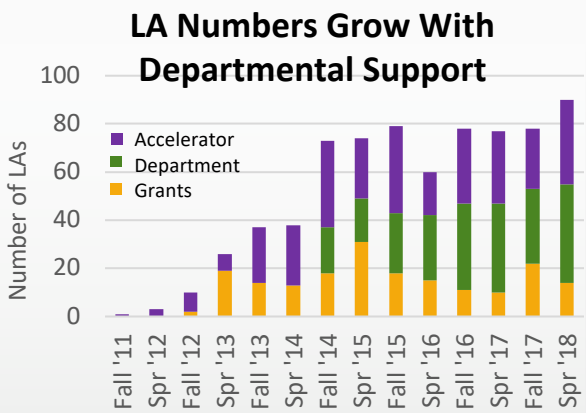
Learning Assistant Program

35,000+
Students Impacted

160+
LAs

100+
Faculty

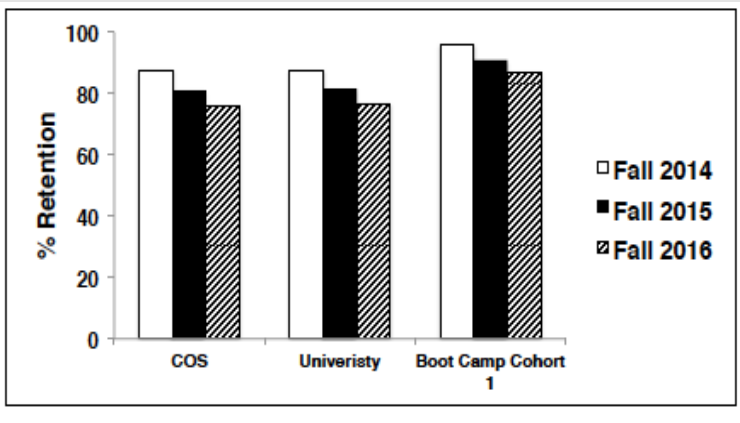


Learning Assistants – undergraduate students who, through the guidance of course instructors and a special pedagogy course, facilitate discussions among groups of students in a variety of settings to encourage student engagement and responsibility for learning.

Math Readiness and Boot Camp

Multi-day residential camps for incoming freshman that prepare students for college in the STEM disciplines through academic and disciplinary preparation and cohort building.

Camps improve student retention



Outreach Activities

- FOCUS (Females of Color Underrepresented in STEM) summer camp for middle school girls and summer academy for high school girls
- Science fairs
- Boy scout and girl scout events and more

STEM Learning Innovation

College of Science

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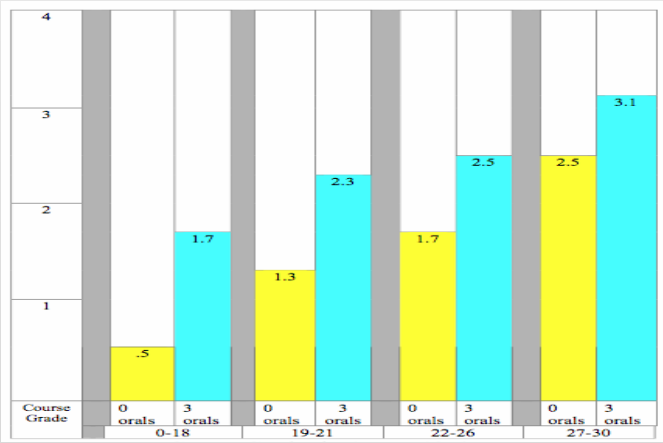
Active Learning in the Classroom

Mason is supporting increased active learning: The current strategic plan aims for 30% of all classrooms being Active Learning Classrooms. The accelerator works to support College of Science faculty teaching in these spaces through learning assistants and faculty development.

Oral Exams

Oral reviews are voluntary and ungraded. About six students meet with a facilitator who asks them to explain their thinking, make connections and negotiate meaning. Students of all abilities benefit from these formative assessments.

Students who do orals (math) get significantly better grades



First Semester Calculus over 2 Semesters

This course was developed to help students who are not yet prepared for the regular course. The class, with 36-45 students, has fail rates below 20%. The students work in small groups at white boards and always have an LA as part of the teaching team.