

# **SIUE Contributes to \$3M Space Initiative Funded by the Department of Defense**

by Megan Wieser  
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EDWARDSVILLE – The Department of Defense (DoD) has awarded more than \$31 million in funding through its National Defense Education Program (NDEP) to support 12 initiatives nationwide aimed at establishing or expanding STEM education, outreach and workforce initiatives for students and educators from early childhood through postsecondary.

Among the awards was \$3 million to the University of Illinois at Urbana-Champaign (UIUC) for the three-year, multi-institutional collaborative: Expanding the Pipeline and Enhancing Education of Students Pursuing Careers in Space.

Southern Illinois University Edwardsville is an institutional partner on the project, and will manage a \$900,000 subaward under the direction of Principal Investigator (PI) of Record and Senior Scientist Jeffrey Sabby, PhD, associate professor in the College of Arts and Sciences' (CAS) Department of Physics.

The School of Engineering's (SOE) Michael Denn, PhD, instructor in the Department of Mechanical and Mechatronics Engineering, is a contributing professor and co-PI of SIUE's subaward. Institutional collaborators include the project PI Joshua Rovey, PhD, with UIUC, and his colleagues Luisa Rosu, PhD, and Michael Lembeck, PhD, as well as Northern Illinois University's (NIU) John Shelton, PhD.

"Dr. Denn and I are extremely proud and excited to be working on this project with our collaborative partners at UIUC and NIU," said Sabby.

In the award proposal, project developers cited that "space is increasingly globally competitive," with China emerging as a leading player. They emphasized the need for the DoD to "grow and enhance its own space workforce and cultivate a strong commercial industry of space contractors and collaborators."

Therefore, in response to a "dearth in this workforce," this project will expand the pipeline and enhance the education of students pursuing careers in space. It will involve the creation of an integrated set of educational resources focused on space, and then implement the resources strategically in undergraduate classrooms and K-12 classrooms, as well as at outreach events, teacher training events and workshops.

The space education resources created will include:

- A web-based self-study platform of massive open online courses (MOOCs) by space experts

- Hands-on activities and kits incorporating environmental testing, AI and rocket propulsion

- An undergraduate student design challenge focused on vertically landing a rocket model

The resources will be strategically implemented in undergraduate classrooms, K-12 classrooms, summer programs, youth programs, outreach events and workshops. SIUE will develop 10 hands-on kits that address key technologies associated with space vehicles and exploration. Two SIUE graduate students and three undergraduate students will be involved in the initiative.

“The types of educational resources we plan to develop have been shown to greatly enhance student foundational knowledge, hands-on capabilities and overall engineering design aptitude,” explained Sabby. “They have also been shown to enhance student interest in STEM and the pursuit of STEM as a career choice.”

“Working on space-related education will expand the types of activities in which SIUE engages,” Denn noted. “SIUE Engineering will provide expertise in design, fabrication, communications, controls, robotics, rocketry, telemetry and many other technologies.”

The proximity and expertise of the institutional contributors will allow for an expansive reach across the state, as well as into the Midwest Region Space Grant Consortia which includes Iowa, Indiana, Missouri, Minnesota, Michigan, Ohio and Wisconsin.

The project’s primary target audience includes high school students, college students in their first or second year at both two and four-year institutions, and the teachers of those students. The secondary audience includes junior high students and teachers.

In a DoD press release, Acting Under Secretary of Defense for Research and Engineering Michael Kratsios said, “The Department of Defense is proud to support the STEM workforce our nation needs to maintain our technological superiority far into the future. We are particularly pleased with the range of initiatives pursued by this year’s awardees, with programs for early childhood education, post-secondary study and outreach to student veterans. This investment will be critical to expanding STEM opportunities to students, educators, and veterans in underserved, underrepresented, and military-connected communities.”

The Expanding the Pipeline and Enhancing Education of Students Pursuing Careers project aligns with the National Science and Technology Council’s Committee on STEM education (CoSTEM) and the DoD STEM Strategic Plan.

For more information on initiatives funded through the DoD’s National Defense Education Program, visit [cto.mil/dod-awards-31-million-ndep-stem](http://cto.mil/dod-awards-31-million-ndep-stem).

Southern Illinois University Edwardsville provides students with a high quality, affordable education that prepares them for successful careers and lives of purpose to shape a changing world. Built on the foundation of a broad-based liberal education, and enhanced by hands-on research and real-world experiences, the academic preparation SIUE students receive equips them to thrive in the global marketplace and make our communities better places to live. Situated on 2,660 acres of beautiful woodland atop the bluffs overlooking the natural beauty of the Mississippi River’s rich bottomland and only a short drive from downtown St. Louis, the SIUE campus is home to a diverse student body of nearly 13,000.

