

Systems Engineering Initiative



WHAT IS THE SYSTEMS ENGINEERING INITIATIVE?

The Space Engineering Institute at Texas A&M University has been engaging undergraduate students in real world projects since 2002 to promote student retention in engineering and to provide valuable applied engineering experiences to undergraduates. Based on the successful model of the Space Engineering Institute, the Systems Engineering Initiative was developed with focus on the needs of the Texas Nuclear Industry Workforce. Our approach is to engage undergraduate engineering students in team projects that offer both vertical integration (freshman to senior) and horizontal integration (multidisciplinary) that promotes mentoring and exposure to other disciplines. In addition, each team is assigned a graduate student mentor, a faculty advisor and an industry partner. Students involved in these projects are full time students pursuing their engineering degrees and they participate in the projects on a part-time internship basis. There is an option for students to be involved with these projects for course credit depending on approval by their department advisor.

For 2009-2010, about sixty (60) undergraduate students from all engineering majors are participating in all our programs with these projects: Advanced Antenna, Robotics Applications for Space Robotics, Integrated Thermal Energy Management System, Space Based Solar Power, Urine Pretreatment, Thermal Management of Satellites with Electric Propulsion, Unmanned Air Vehicles, and EAB Room Heat Up Rate (South Texas Project)



Student Presentations at NASA JSC, April 2009

WHAT BENEFITS DO I GET FROM PARTICIPATING?

- Valuable engineering experience on real world engineering problems.
- Experience in working with other engineering majors.
- Skills in team building and communications.
- Interaction with graduate students and faculty experts.
- Interaction with NASA/industry seasoned mentors.
- Source of income. Student participants receive compensation starting at \$7.5/hour.



SEI Materials Team on NASA's Microgravity Plane

Systems Engineering Initiative Students Visiting Industry



SEI Students at Research Competitions and Conferences

TAMU 2009 Student Research Week Awards

SEI students participated in this event and received the following awards:

- Session Winner in Electrical Engineering—Advanced Tunable Antenna
- 1st Place in Nuclear Engineering—Fuel Cell Team
- 2nd Place in Nuclear Engineering—Nuclear Team—STP
- 2nd Place in Soil Hydrology/Water Resources/Environmental Studies —Urine Pretreatment Team
- 2nd Place in Aerospace Engineering—Space Based Solar Power & SMA Team

International Conference for Nuclear Engineers, Brussels, July 2009!

SEI students working with South Texas Project travelled to Brussels to present their work on the EAB Room Heat Up Rate along with South Texas Project engineers and TAMU faculty from Nuclear Engineering.

SmallSAT Conference, Utah, August 2009

The SEI Advanced Antenna team presented their work at the Small SAT conference in Logan, Utah.

What Do SEI students say about the program?

“The experiences and opportunities I have had with SEI have been amazing in contributing to my academic success and preparing me for a career. I have a significant amount of job opportunities in front of me, and can honestly say that SEI has been a major contributing factor in landing these. At interviews, I tend to speak more about my experiences at SEI than my two internships combined. The breadth and depth of knowledge the program has given me has been a wonderful supplement to my course work.” SEI Student

FOR MORE INFORMATION:

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