

# Mechanical and Aerospace Engineering Senior Design Program



**INVEST**

in the next generation  
of engineers

**GET**

real-world design solutions  
to important problems



**UCF**



## WHAT IS SENIOR DESIGN?

This culminating “real-world” project-based learning experience prepares senior-level undergraduate engineering students for professional practice as they develop knowledge and skills required on the job.

UCF mechanical and aerospace engineering students work in carefully assembled collaborative teams to design a system, component or process to meet a client’s desired needs within realistic constraints.

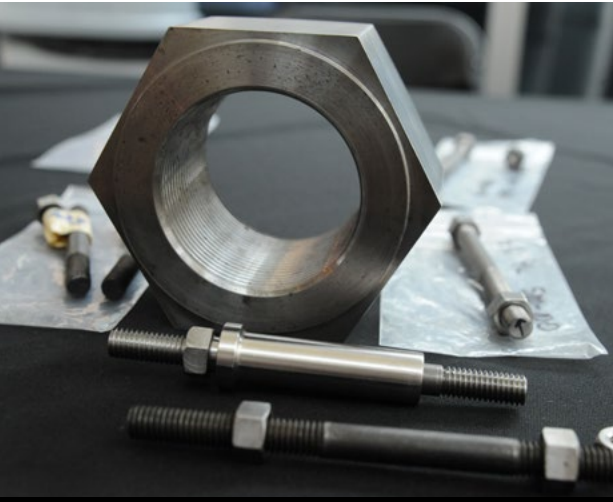
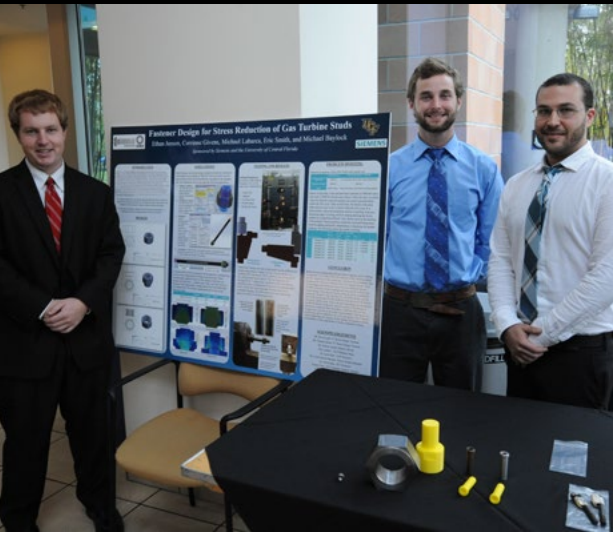
Under the guidance of experienced engineering instructors and faculty advisors, students are expected to demonstrate initiative and develop

a recognition of the need for, and ability to engage in, lifelong learning.

The experience is enhanced with programs offered by the UCF Engineering Leadership & Innovation Institute (eli<sup>2</sup>):

- Senior Design Boot Camps that emphasize collaboration, innovation, creativity and accountability
- UCF Maker Space Lab Complex - Harris Gathering Lab, Idea Lab, Texas Instruments Innovation Lab, and Manufacturing Lab - that enables the transformation of ideas into working prototypes





## SPONSOR BENEFITS

- Engage with America's Partnership University™ and collaborate with UCF students, faculty and staff
- Solve a challenging problem of value to you and your organization
- Safely evaluate ideas in a low-risk environment
- Get acquainted with some of the best and brightest engineering students for potential recruitment
- Capitalize on the energy and enthusiasm of UCF senior-level mechanical and aerospace engineering students who are specially selected to address your design problem
- Build lasting relationships with UCF and the Department of Mechanical and Aerospace Engineering while maintaining ownership of Intellectual Property
- Be assured about your project: student teams are mentored and supervised by experienced engineering faculty and staff
- Receive project results that include:
  - Requirements Definition and Competitor Benchmarking
  - Technology Studies and Feasibility Analysis
  - Concept Generation and Evaluation of Alternatives
  - Design Modeling, Analysis and Simulation
  - Professionally Built Prototypes for Test and Evaluation
- Support a new style of engineering education that focuses on real-world results!

*Above: A senior design team shows their project: Fastener for Stress Reduction of Gas Turbine Studs, sponsored by Siemens.*

*Below: A student-designed electrical air-conditioning system that can cool an airplane's cabin before passengers board, sponsored by Piper Aircraft.*



## WHAT DO SPONSORS PROVIDE?

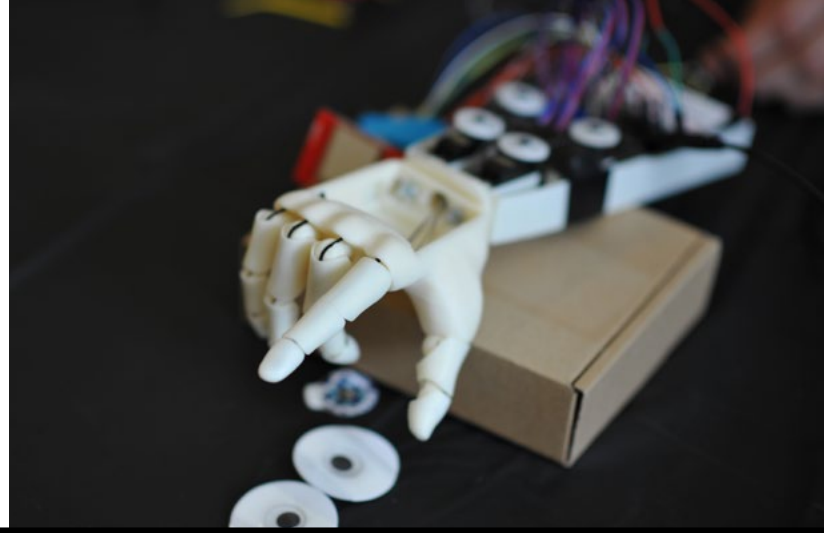
1. Definition of a design problem important to their organization
2. Participation of sponsor liaison who can answer questions pertinent to the problem
3. An educational grant of \$12.5K in support of student team efforts over the time span of two academic semesters

## HOW WILL SPONSOR FUNDS BE USED?

- Engineering instructors that provide students guidance and direct supervision, and who serve as liaisons between UCF and the sponsor
- Technical services (e.g., fabrication, 3D printing)
- Purchasing of materials and supplies
- Travel expenses
- Program administration and development

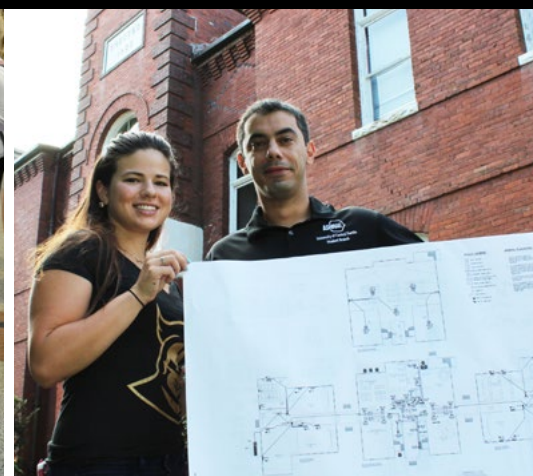
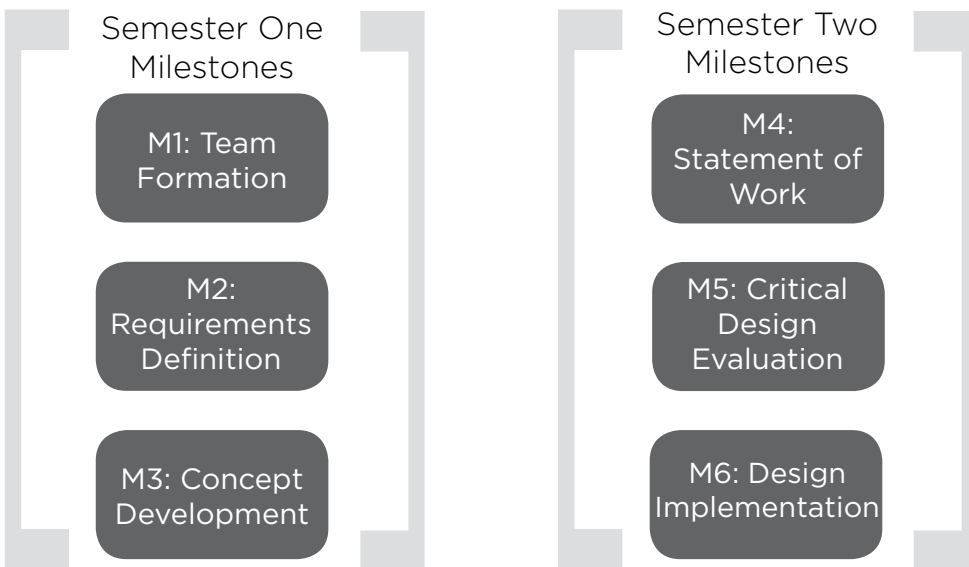
## WHAT TYPES OF PROJECTS WORK BEST?

- Problems that are important to the sponsor, but not on their critical path
- Open-ended design problems that excite students about technology
- Projects that offer challenge at a level appropriate for undergraduate senior-level students



## PROCESS AND TIMELINE

- Projects can start either Fall or Spring semesters.
- Pre-project launch: sponsor commitment including project definition, sponsor liaison identification and funding
- Project milestones span two semesters as shown



### Contact

Mark Steiner  
Professor and Director  
of Engineering Design  
407-823-0724  
Mark.Steiner@ucf.edu

UCF Department of  
Mechanical & Aerospace  
Engineering  
407-823-2416  
<http://mae.ucf.edu>



**College of Engineering  
and Computer Science**

UNIVERSITY OF CENTRAL FLORIDA

*Opportunity Starts Here*