TEXAS A&M UNIVERSITY
Department of Biomedical Engineering
IMPACTING HEALTH OUTCOMES

CAPSTONE EXPERIENCE

engineering.tamu.edu/biomedical
FACTS AND FIGURES

2019 PROFILE

69,465 Students at Texas A&M University

8th College of Engineering public undergraduate program ranking

476 Biomedical undergrads

48% Female

23% Minority

61,000 sq. ft. of design space

State-of-the-art equipment | Materials
Prototyping tools | Support staff
The senior design program presents a unique opportunity for your organization to work on open-ended design challenges with a team of motivated and newly trained biomedical engineers at minimal cost to you. Although the benefits to this program are extensive, the more prominent features include:

- **Low-cost skunkworks R&D**: Teams create working, physical prototypes to see their ideas in action. Final project reports and prototypes are sent to the sponsor at the conclusion of the project.

- **IP/Confidentiality**: Students have the ability to engage in non-disclosure agreements between the team members, course instructor and sponsor, with all intellectual property given to the students and/or company sponsors.

- **Year-long recruitment**: Your design/engineering team will work closely with a team of 4-6 graduating seniors for two semesters, providing ample opportunity to evaluate them for permanent employment.

- **Brand visibility**: Your logo will be viewed within the design labs and on electronic advertisements in the Emerging Technologies Building and department website, along with inclusion in printed materials.

- **Employee benefits**: The design projects act as a training ground for a sponsor’s personnel to manage a remote team for employee development.

- **Additional engagement opportunities**: Sponsors are invited to judge the Capstone Design Expo, an opportunity to directly interact with current and graduating students in the College of Engineering for recruitment purposes.

**RECENT DESIGN PROJECT EXAMPLES**

- Physiological sensors for firefighter mask (BlastMask)
- Mechanical heart simulator (Biotronik)
- Catheter system for alcohol ablation (Texas Heart Institute)
- Pediatric annuloplasty ring device (Cryolife)
- Subcutaneous defibrillator electrode anchor (Boston Scientific)
Our students complete design courses beginning their first semester on campus and continuing through each year of the biomedical engineering curriculum. At the start of the capstone experience, students have built a foundation in technical skills, ethics, relationship management in a core-team environment, written and oral communication skills, and essential design elements within a regulated industry.

- **Semester 1:** Project definition, background research, initial concept generation
- **Semester 2:** Prototyping, testing and refinement, Project Showcase

### CAPSTONE EXPECTATIONS

#### STUDENT DELIVERABLES

- Work as a team to follow a systematic process of designing a medical device or solution to a medical problem
- Design a medical device or system based on the sponsor’s requirements, including a project statement, statement of need, a clear set of user requirements and identification of key constraints for the design
- Work with a project sponsor to determine design inputs, design outputs and related specifications
- Develop a plan for prototyping and testing concepts within a budget. Conduct design review, fabricate prototypes, verify and test the design
- Organize, plan and deliver a Design History File and prototype to sponsor

#### SPONSOR EXPECTATIONS

- Provide financial support to fund the project and the supplies necessary to fabricate the design team’s final device associated with the project
- Provide a liaison that will meet with the team on a regular basis to review and guide their team’s progress
- Submit an evaluation of the sponsored project team each semester
“Quest has sponsored Texas A&M biomedical engineering capstone teams for a number of years that have helped advance both our products and manufacturing. Our talented student team brought their superb Texas A&M education to the project, applied that to an industry project and advanced a new product design to market at a significant cost saving.”

Jeff Summers | Vice President of Operations | Quest Medical

“The team Boston Scientific is sponsoring has been very impressive. The students are creative, collaborative, hard working, and they are utilizing the tremendous resources Texas A&M provides to them. This project exposes Texas A&M students to real world medical device utilization, gives them the entire picture from health care economics to patient outcomes, and teaches them how to go about developing a commercially viable product.”

Shantanu Reddy | Director, Senior Fellow | R&D | Boston Scientific CRM
Interested in a team with the ability to design new products, make improvements to existing designs or identify new design process options? Let BME@TAMU students help make your company goals a reality!

For more information on sponsor opportunities, participation costs or to finalize your commitment for the coming year, please email bmendesign@tamu.edu or call (979) 458-2323. We look forward to making a positive contribution to your organization!