Master of Engineering Program in Biomedical Engineering
Creating Professionals in Device Life Cycle Engineering & Management
CREATING INDUSTRY LEADERS

The **Master of Engineering** (ME) program in the Department of Biomedical Engineering at Texas A&M University is an experiential, learning-based experience designed to prepare engineers to enter the medical devices industry. The program spans the entire medical device life cycle, covering important topics such as problem definition, solution development, technology assessment/intellectual property, detailed design and engineering, risk analysis, design verification and validation strategies, quality engineering, regulatory and reimbursement strategies, market analysis, and go-to-market/revenue modeling strategies.

**Horizontal/Lateral Skills**

- Entrepreneurship | Project Management | Technology Law | Design Verification & Validation | Risk Analysis & Management | Regulatory Affairs & Quality Systems | Design Controls GLP/GMP | Leadership

**BMEN Domain Skills**

- Instrumentation
- Medical Imaging
- Device Design
- Biomaterials
- Biomechanics
- Physiology
- Nanotechnology
- MEMS...etc

**OUR APPROACH**

The ME curriculum is designed to create "T-shaped engineers"—engineers with lateral skills as well as deep engineering domain skills—through a combination of course work and a comprehensive, immersive project/internship experience in industry or in the clinical setting. Graduates of the program are ready to contribute to the commercial success of a company and pursue management-level leadership roles.

**Industry Internship/Clinical Immersion Project**

- Team-based project experience | Leadership | Teaming | Self awareness | Empathy
OUR STUDENTS

Students in the ME program have the opportunity to further their engineering education with the aim of entering the medical device industry; advance their careers in the medical device industry; change their careers to enter the medical device industry; or simply refresh and enhance their technical and management skills with a focus on the medical device industry.

Through the program, students are enabled with the skills to enter the medical device industry and solve critical engineering challenges/business interface challenges in health care. They collaborate with industry and hospital personnel to identify unmet needs, engineer technologies that address these needs, and develop paths-to-market for these technologies.

OTHER OPPORTUNITIES

Real-world, experiential learning is a major component of the ME program and realized through internships as part of the formal academic curriculum. Action learning is enabled via close collaborations and project immersion opportunities through internship programs with medical device companies. Students are also trained in the front end of product innovation through clinical, immersion-based courses and projects.
OUR FACULTY

Balakrishna Haridas, Ph.D.
Professor of Practice, Department of Biomedical Engineering  
Director of the Master of Engineering Program

Haridas is an experienced medical technology entrepreneur, executive and educator in product and technology innovation and commercialization. He has more than 25 years of experience managing multimillion-dollar industrial research-and-development (R&D) collaborations and has been responsible for several successful startup companies, licensing, manufacturing and distribution deals. During his career, Haridas has raised and directed more than $70 million in funding for product R&D and commercialization from industry, government (NSF/NIH) and venture capital sources with product revenues greater than $2 billion.

John Hanks
Professor of Practice, Department of Biomedical Engineering  
Director of Industry Relations for the Center for Remote Health Technologies and Systems

Hanks is an industry veteran with more than 25 years of corporate experience at National Instruments and Siemens Medical Systems. While at National Instruments he held positions as vice president of life sciences and healthcare and vice president of industrial and embedded products. As vice president of life sciences and healthcare, Hanks led teams that developed commercial subsystems and prototype optical coherence tomography imaging, mass spectrometry, DNA sequencing and molecular diagnostics devices. Hanks has defined, developed and introduced products with cumulative revenue greater than $1 billion.

Alan Brewer
Professor of Practice, Department of Biomedical Engineering

Brewer is an experienced medical device executive focused on the development and marketing of cardiovascular devices. Previously, he was assistant director of the Center for Technology and Innovation at the Texas Heart Institute, working to spin-out its technologies. While Brewer served as director of strategic marketing at Intermedics, the company achieved seven successive records for increased sales and profits (> $300M per annum). Marketing initiatives designed and managed by Brewer have captured ‘IR top 100’ awards and corporate marketing creativity awards. Brewer holds four patents in his field and has written and contributed to more than 45 publications.
The ME program offers a flexible curriculum that equips students for success by allowing them to tailor their training towards differed aspects of the product life cycle.

Two tracks of study are offered:

**Track A – Industry Immersion and Product Engineering**
All admitted students are offered entry into this track, which prepares them for industry via coursework in the first two semesters (typically fall and spring). The culminating experience in this track is a one- or two-semester industry internship (the second semester is optional).

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<tr>
<th>Fall Coursework</th>
<th>Spring Coursework &amp; Internship Planning</th>
<th>Summer Industry Immersion and Internship</th>
<th>Fall Optional Additional Industry Internship</th>
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**Track B – Clinical Immersion and Product Innovation**
Admission into this track is based on demonstrated interest by an admitted student who is in Track A in the first semester. Students in this track will be trained in methods used to discover clinical problems, identify unmet needs and engage in design, development and verification testing of medical devices while participating in immersion experiences with the program’s established clinical partners. Interested students must apply during the fall semester in order to be considered for this track, which is offered in the spring and summer semesters.

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<tr>
<th>Fall Coursework</th>
<th>Spring Coursework</th>
<th>Summer Bioinnovation 1</th>
<th>Fall Bioinnovation 2</th>
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In addition, the ME program curriculum is organized to allow interested students to concurrently pursue certification in various topics, such as quality engineering for regulated medical technologies. Students in the ME program also may pursue a dual degree that includes a Master of Business Administration, through partnership with Mays Business School at Texas A&M.
“Taking the extra time to get an ME was one of the best decisions I’ve made. I have plenty of options with regards to career paths and much more knowledge that makes me valuable to employers.”

Vincent Zaballa – Master of Engineering Student and Covidien, Ltd. Intern

“We encourage participation in the Texas A&M BME ME program; companies like RBC need graduates that are ‘plug and play’ ready for the development and production of next-generation medical devices.”

Adam Laubach – CEO, RBC Technologies

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