BIOMEDICAL ENGINEERING

Third-Year Options

• Clinical Innovation and Design
• Dual Degree: MD/MSE

SHELLY SAKIYAMA-ELBERT, PHD
Chair & Professor, BME

LAURA SUGGS, PHD
Professor, BME

CARLOS MERY, MD, MPH
Associate Professor of Surgery, DMS
WHAT IS BIOMEDICAL ENGINEERING

- Integrates biological and medical sciences with engineering problem-solving tools to produce solutions to complex problems in medicine

- Medical Imaging & Instrumentation

- Regenerative Medicine & Nanotechnology

- Computational Modeling & Simulation

- Molecular, Cellular & Tissue Biomechanics
YEAR 3 OPTIONS IN BME

DISTINCTION
Clinical Innovation and Design

DUAL DEGREE
MD/MSE
Clinical Innovation and Design
CLINICAL INNOVATION & DESIGN

- Develop a market-viable product & business plan
- 9-month team project
- Multidisciplinary teams of medical and engineering students
- Distinction only or as a component of the MSE
CLINICAL INNOVATION & DESIGN

AUG  SEP - OCT  NOV - DEC  JAN - MAR  APR - MAY

- PRELIMINARY
- CLINICAL NEEDS ASSESSMENT
- NEED SELECTION AND SPECIFICATION
- BRAINSTORMING AND PROTOTYPING
- BUSINESS / PROJECT PLAN
MENTORS: ENGINEERING

SHELLY SAKIYAMA-ELBERT, PHD
Professor & Chair
Director, Clinical Innovation & Design
Department of Biomedical Engineering

JAMES TUNNELL, PHD
Associate Professor
Department of Biomedical Engineering
MENTORS: MEDICINE

CARLOS MERY, MD, MPH
Congenital Heart Surgeon
Co-Director, Clinical Innovation & Design
Associate Professor of Surgery & Pediatrics
Texas Center for Pediatric & Congenital Heart Disease

JOHN UECKER, MD
General Surgeon
Professor
Chief of Innovation & Entrepreneurship
Department of Surgery & Perioperative Care
FINAL PRESENTATION

- Capture the year in review
- Present to a broad audience including clinicians and the local medical device and technology innovation industry
DISTINCTION ELIGIBILITY

- No engineering or design background necessary!
- Have interest in:
  - Clinical needs identification
  - Innovative devices
  - Entrepreneurship
- Short application in Interfolio due December 1 of MS2

“The skills and incredible connections I have gained through this program will allow me to better understand what is truly going on with my patients and develop solutions for often overlooked populations.”

Natalie Weston, 21-22 CID Cohort
MASTER OF SCIENCE IN ENGINEERING (MSE)

- 30 hours of coursework
  - 12 hours already earned in MS1
  - 18 hours completed over two semesters in BME

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<tr>
<th>MS1</th>
<th>MED 181</th>
<th>BME 681M (6 hours)</th>
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<td>Normal Body Structure &amp; Function</td>
<td>MED 185</td>
<td>Mechanisms of Disease</td>
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<td>BME 685M (6 hours)</td>
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MASTER OF SCIENCE IN ENGINEERING (MSE)

**MS3 Fall**
- BME 382J.4 (3hrs) Engineering Biomaterials
- BME 381J.3 (3hrs) Imaging Modalities
- 1 elective (3hrs) Biomechanics or Biostats or other

**MS3 Spring**
- BME 381J.8 (3hrs) Imaging Laboratory
- BME 384J.5 (3hrs) Instrumentation Projects
- 1 elective (3hrs) Research project or other
ELECTIVE TOPICS

- Cell & Tissue Engineering
- Delivery of Therapeutic Agents
- Bioelectronics & Biointerfaces
- Health Equity in Engineering Design
- Cell & Molecular Biomechanics
- Imaging & Image Processing

Elective substitutions allowed to match your background and interests
CID PROJECT (12 HRS): OPTION FOR MSE

- Elective BME Course (3 credit hrs)
- Elective BME Course (3 credit hrs)

Substitute 9-month long project for 12 hours toward MSE
MSE ELIGIBILITY

- Engineering BS not required
- Some biology, chemistry, physics and calculus recommended
- Application Deadline is December 1
  - 3 letters of recommendation
  - Statement of purpose
  - Transcripts
- GRE not required
THANK YOU.

Join us for the breakout session!

clinicalinnovation@utexas.edu