October 29, 2015

BIOENGINEERING
Educating Thinkers, Leaders, and Entrepreneurs

Inaugural Industry-MEng BME Fellows Mixer
Integrating Entrepreneurship and Innovation

October 29, 2015
Value Proposition

• Sustain and support SC medical device economy through the development of a skilled, innovative and inspired workforce
• Provide the ultimate education environment in bioengineering/biomedical engineering for SC
• Exemplify translation through innovation and creativity
• Global agents of change with unique skills:
  – Communication
  – Industry ready
  – Entrepreneurship
  – Clinical application
  – Economic development
M.Eng Program Overview

- Device industry focused
- Provides skills and expertise that enhance the individual’s ability to contribute to the technical workforce.
- Application of engineering knowledge to solve design problems.
  - Not your typical masters degree thesis research program!
- Eligibility – ABET accredited BS degree in engineering
- The minimum requirement for this degree is one year of full-time graduate study or its equivalent.
- Eligibility for graduation requires a minimum of thirty (30) graduate credits from recommended core and technical elective courses. An internship of 1-2 credits is expected for graduation.
- No thesis is required for this degree.
M.Eng Program Overview

- **Core (13 credits):**
  - BIOE 8000 – Bioengineering Seminar (1 credit)
  - BIOE 8130 – Industrial Bioengineering (3 credits)
  - BIOE 8140 – Medical Device Commercialization (3 credits)
  - BIOE 8600 – Biomedical Engineering Device Design Innovation (3 credits)
  - BIOE 8610 – Biomedical Engineering Product Translation (3 credits)

- **Technical electives (15 credits):**
  - Orthopaedic Engineering
  - Cardiovascular Engineering
  - Biomaterials
  - Modeling
  - Biomedical Imaging
  - Etc.

- **Internship (2 credits):**
  - BIOE 8900-Internship (1-2 credits) (45-90 contact hours)
  - Clinical and/or industrial internship
# MEng in BME

## Internship (2 credits)
- Clinical Internship (Max 1 credit)
  - GHS
  - AnMed
  - MUSC College of Medicine, College of Health Professions (Rehabilitation), College of Dental Medicine
  - Others
- Industrial Internship (≥ 1 credit)
  - Industry partners
  - SCBIO Network
  - CUBEInC Biomedical Corporate Partner Collaboration

## MEng Capstone Design
- Medical Device and Technology
- IP owned by universities/companies – technology protected (disclosure, patent)
M.Eng Capstone Design – BioE8600

**Objective / Overview:**
- To develop biomedical engineers that will contribute immediately upon entrance into the device industry
- Team taught by local medical device industry experts

**Learning Block Topics:**
- US FDA / OUS Regulations
- Quality Assurance / CAPA systems
- Packaging
- CAD / Manufacturing / GMP
- Sterilization

**Applied Design & Development Skills:**
- Carry out voice of customer (VOC) meetings
- Development of a design improvement plan for device prototypes developed in BioE 4030 (senior design)*
- Development of US FDA and OUS regulatory filing strategic plans
- Participate in site visits
Objective(s):
- To hone the engineering design skills of our biomedical engineers while providing them with the business acumen required for product translation.

Lecture Block Topics:
- MedTech business/finance basics
- Reimbursement
- Clinical trial design / Post market surveillance

Applied Design & Development Skills:
- Iterative design and prototyping
- Design and development phase gate meetings
  - We are looking for mentors for Spring 2016 (Jan – April)
- KOL / VOC meetings
- Business plan development
Biomedical Corporate Partner Collaboration

• Connect with biomedical engineering experts and inventors
• Highlight their company and connect with other partners
• Take advantage of cutting-edge facilities for medical device and technology development
• Include the collaboration and its network as marketing collateral
• Participate in shaping the biomedical work-force and its development
• Engage in business-building opportunities
Biomedical Corporate Partner Collaboration
Benefits

• Use of equipment in the shared facilities at the CUBEInC and in the Department of Bioengineering at published internal rate.
• Acknowledgement of membership through business logo display at Patewood 4C and collaboration website.
• Facilitated communication with more than 20 research groups across CUBEInC.
• Registration for any CUBEInC sponsored events including the C. Dayton Riddle CUBEInC Distinguished Seminar Series, industry-university mixers, Research Symposium, workshops, and social events.
• First and privileged access to MEng student resume database for internships.
• Access to the Bioengineering Professional Development Office for interview and skills match.
• Sponsorship of a faculty-mentored Creative Inquiry team for innovation, design and/or research with partner’s IP protected project; supplies for project completion to be provided by partner.
Benefits

• Students HAVE a four-year engineering degree.
• Flexible scheduling.
  • Contact us during the semester if you discover a need.
  • You and the student can set up a schedule that fits best.
  • If you need the student more than the required contact hours, you may pay them.
• Looking to hire?
  • An experience can serve as an informal interview
• Thinking about implementing an internship/co-op program? This would be a cost-effective way to do so.
MEng Leadership

- Jeremy Mercuri, MEng Program Director
- Jennifer Hogan, MEng Coordinator
- Michael Gara, CUBEInC Director
- John Desjardins, BME Design Leadership Team Director
Inaugural MEng Fellows

Master of Engineering Inaugural Class of 2016
Canvas for Success
Team BIOE

What’s Next?

Faculty Staff
- Engaged and motivated
- Scholars and innovators
- Skilled
- Inspired
- Leaders
- Enablers
- Opportunity seekers
- Entrepreneurs

Students
- Talented
- Entrepreneurial
- Passionate
- Agents of Change
- Leaders

Partners
- Greenville Health System
- Medical University of SC
- Biomedical Device Industry
- Donors
- Community
- Bioengineering Alliance of SC