

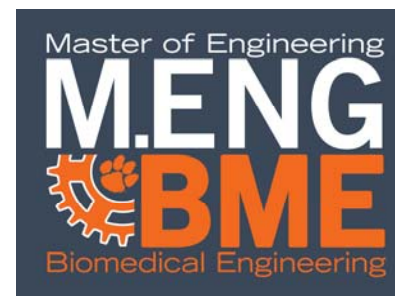


## BIOENGINEERING

Educating Thinkers, Leaders, and Entrepreneurs

# Inaugural Industry-MEng BME Fellows Mixer

Integrating Entrepreneurship and Innovation



October 29, 2015

# Value Proposition

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- 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



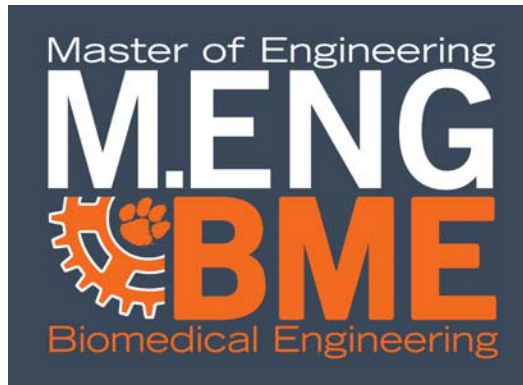
# M.Eng Program Overview



- 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

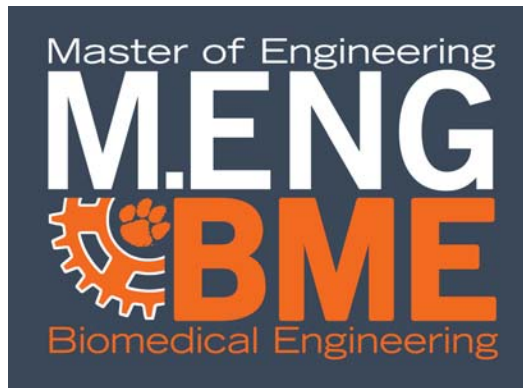
## Internship (2 credits)

- Clinical Internship (Max 1 credit)
  - GHS
  - AnMed
  - MUSC College of Medicine, College of Health Professions (Rehabilitation), College of Dental Medicine
  - Others
- Industrial Internship ( $\geq 1$  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)

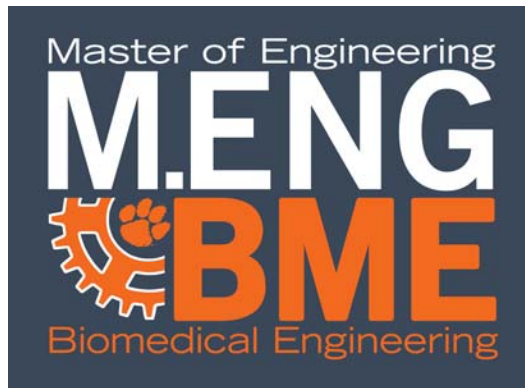
# M.Eng Capstone Design – BioE8600



- 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



# M.Eng Capstone Design – BioE8610



- 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

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- 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

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- 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

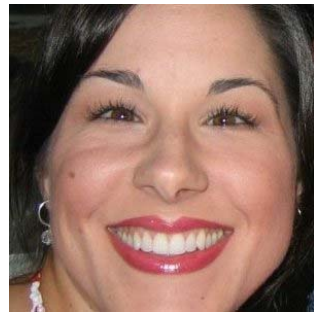
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- Students HAVE a four-year engineering degree.
- Flexible scheduling.
  - Contact us during the semester if you discover a need.
  - You and the student can set up a schedule that fits best.
  - If you need the student more than the required contact 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

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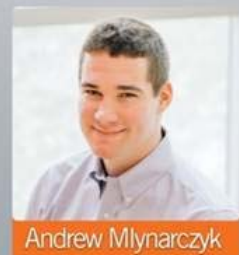
- Jeremy Mercuri, MEng Program Director
- Jennifer Hogan, MEng Coordinator
- Michael Gara, CUBEInC Director
- John Desjardins, BME Design Leadership Team Director



# Inaugural MEng Fellows



Master of Engineering  
Inaugural Class  
of  
2016



# Canvas for Success Team BIOE



## 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

What's Next?

