Master of Engineering in Biomedical Engineering (M. Eng. In Biomedical Engineering)

Program Objectives
The M.Eng. in Biomedical Engineering (BME) degree program provides an in-depth advanced engineering education to students who have completed a bachelor of science degree in engineering or science and desire to embrace an industrial career in the field of medical technology. It provides an intellectually rigorous professional graduate education that emphasizes clinical applications and biomedical engineering design to better train a workforce to sustain a growing biomedical industry in South Carolina and in the United States. This program is based on core biomedical engineering and relevant clinical applications, providing the basis for strong technical contributions in industry. This program prepares engineering graduates for professional practice in BME and leadership roles in the biomedical science and technology private sector to help develop and sustain economic growth.

Specifically, students in the program will acquire a broad perspective of the biomedical engineering discipline that complements their undergraduate training in engineering and in-depth knowledge of an essential area in biomedical engineering. Graduates will be equipped to design biomedical devices and develop therapeutic strategies within the bounds of health care economics; the needs of patients and physicians; the regulatory environment for medical devices and pharmaceuticals; and stringent ethical standards of biomedical engineering practice. Overall, the program will graduate students who:

- Demonstrate advanced-level academic expertise and practical engineering experience necessary to function as biomedical engineering professionals in a modern, ever-changing world. (Advanced Knowledge and Life-long Learning)
- Display competence by being selected for employment by industrial, academic or government entities or further professional/graduate studies. (Career Opportunities)
- Understand the broad social, ethical and professional issues of contemporary engineering practice. (Awareness and Responsibility).

To achieve these objectives, the Master of Engineering has set the following student learning outcomes (SLO) for its graduates. All M.Eng. graduates will demonstrate:

1. An ability to apply mathematics, life sciences, physical sciences, and engineering to advanced biomedical engineering problems.
2. An ability in proficiently designing and validating experiments, systems, components, or processes to meet desired needs.
3. An ability to proficiently identify, formulate, and solve advanced biomedical engineering problems.
4. An ability for proficient contemporary technical and scientific comprehension and lifelong learning.
5. An ability for proficient technical and scientific communication.
6. An ability to use advanced techniques, skills and modern engineering tools necessary for biomedical engineering practice.

Admission Criteria
Admission to a graduate level program is controlled by the Graduate School at Clemson University. M.Eng. in BME applicants must meet the minimum requirements established by the University for
admission to a graduate program. In addition, individuals with the following qualifications will be admitted into the M.Eng. program:

- Must hold a BS degree from an ABET-accredited program (or equivalent if from an international university) in bioengineering, biomedical engineering or a related engineering and technology discipline and must provide transcripts from the institution where the degree was obtained.
- A minimum undergraduate grade point average (GPA) of 3.0 is required for admission.
- International students are required to submit TOEFL scores.
- Individuals may request a waiver of some of the above requirements (e.g., undergraduate GPA less than 3.0 or undergraduate degree not in engineering) and admission to the program if they provide sufficient evidence to the graduate program director that they have had sufficient industrial experience to warrant a waiver. It will be up to the program to accept or decline this request.

**Curriculum**

The M.Eng. curriculum provides skills and expertise that enhance the individual’s ability to contribute to the technical workforce. The degree will provide professionals in the technical workforce an opportunity to continue their education and development in the context of an advanced degree. The M.Eng. also serves the practicing engineer to further his/her career in the context of an application of engineering knowledge, as opposed to a master’s of science in a research context, which is focused on discovering new knowledge.

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 consisting of 15-17 credits from a recommended core and 13-15 credits of technical elective courses. An internship of 1-2 credits is expected for graduation. No thesis is required for this degree. A student who has previous graduate work at another institution that has not been used towards a degree may petition the Graduate Committee to transfer up to nine (9) semester credit hours of relevant course work with grades of “B” or better.

**Core:**

- BIOE 8000-Seminar (1 credit) (1,0)
- BIOE 8130-Industrial Bioengineering (3 credits) (3,0)
- BIOE 8140-Medical Device Commercialization (3 credits) (3,0)
- BIOE 8010-Biomaterials (3 credits) (3,0)
- BIOE 8200-Biomechanics (3 credits) (3,0)
- BIOE 8700-Bioinstrumentation (3 credits) (2,3)
- BIOE 6350-Computer Modeling of Multiphysics Problems (3 credits) (2,3)

**Internship:**

- BIOE 8900-Internship (1-2 credits) (45-90 contact hours)

*Technical electives: Subject to modification (please see the MEng Graduate Coordinator and refer to the most recent list)*