BIOMEDICAL ENGINEERING (BME)

Courses

BME 001. Intro to Biomedical Eng Design. 0 or 2 Credits.
Introduction to the biomedical engineering profession. Hands-on experiences that emphasize interdisciplinary teamwork, technical communications, and project design methodologies. Co-requisite: ENGR 002.

BME 081. Biomedical Eng Lab I. 0 or 2 Credits.
Laboratory experiments pertaining to biomedical instrumentation and biomechanics. Computer-based modeling of biological networks.

BME 090. Internship. 1-3 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

BME 092. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BME 096. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

BME 151. Fall BME Workshop. 0 or 1 Credits.
Seminars and lab tours to provide biomedical context to concurrently taken engineering courses. Professional development including guidance and review of resume, cover letter, and personal statement.

BME 152. Spring BME Workshop. 0 or 1 Credits.
Guest speakers and seminars to provide biomedical design examples, ethics, and insight to the biomedical engineering design process including regulatory processes.

BME 181. Biomedical Eng Lab II. 0 or 2 Credits.
Laboratory experiments including those related to biomedical sensing and instrumentation, biomechanics, tissue engineering, and/or computer-based modeling of biological networks. Prerequisite: BME 081.

BME 187. Capstone Design I. 3 Credits.
Multidiscipline teams apply their knowledge to design, build and test a functional prototype that meets their client’s requirements and solves their unique problem. Teams follow typical engineering design and project management processes that include periodic reports, presentations, meetings, reviews and demonstrations using standard industry tools. Prerequisite: Senior standing. Cross-listed with: EE 187, ME 185.

BME 188. Capstone Design II. 3 Credits.
Multidiscipline teams apply their knowledge to design, build and test a functional prototype that meets their client’s requirements and solves their unique problem. Teams follow typical engineering design and project management processes that include periodic reports, presentations, meetings, reviews and demonstrations using standard industry tools. Prerequisite: Senior standing. Cross-listed with: EE 188, ME 186.

BME 190. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

BME 192. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BME 193. College Honors. 3-6 Credits.
Honors studies leading to a thesis.

BME 194. College Honors. 3-6 Credits.
Honors studies leading to a thesis. Prerequisite: BME 193.

BME 196. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

BME 197. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

BME 198. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BME 199. Cooperative Ed Experience. 12 Credits.
On-site, full-time, supervised work experience in biomedical engineering or related field appropriate for sophomore or junior levels that also satisfies the overall educational objectives defined by the CEMS Engineering Co-op Program. Prerequisite: Sophomore or Junior; Biomedical Engineering major.

BME 227. Biomedical Instrumentation. 3 Credits.
Measurement techniques for biomedical engineering research and industry, and health care institutions. Integrated biomedical monitoring, diagnostic, and therapeutic instrumentation. Prerequisite: EE 100 or EE 004. Co-requisite: EE 120, ANPS 020, or Instructor permission. Cross-listed with: EE 227.

BME 240. Wearable Sensing. 3 Credits.
Covers current state-of-the-art in wearable sensors and the biomechanical and physiological phenomena they are being used to measure. Emphasis will be given to applications related to human health and medicine. Prerequisite: ME 111 or EE 171 or equivalent with Instructor permission.
BME 241. Biomedical Signal Processing. 3 Credits.
Covers several important physiological signals often monitored in biomedical contexts (e.g. EMG, ECG, PPG). Content will include the physiology that generates the signals as well as the signal processing techniques (e.g., LTI filters, empirical mode and wavelet decomposition) and algorithms used for analysis. Prerequisite: ME 111 or EE 171 or equivalent with Instructor permission.

BME 290. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

BME 292. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

BME 296. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

BME 297. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

BME 298. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.