

Proposed changes to BME Undergraduate Curriculum

November 3, 2021

Current changes to the Cell & Tissue Track: Replacement of MMAE 200 (Statics) with a BME 2XX Introductory Biomechanics course

Rationale: MMAE 200 (Statics; 3 credits) is currently required for BME UGs in the C&T track. Effective Fall 2022 the MMAE department will no longer offer MMAE 200 or MMAE 202 (Mechanics of Solids), instead the two courses will be combined into a single 4 credit hour course offering.

The BME department will replace MMAE 200 with a BME 200-level Introduction to Biomechanics course (3 credit hours). In addition to maintaining the total number of credit hours in the C&T BME UG curriculum, the proposed BME course offers several benefits to BME students including 1) an introduction of concepts and skills necessary for understanding fundamental behavior of solids and structures and their application to physiological, cellular and tissue systems, 2) pre-requisite knowledge for upper-level cell and tissue engineering courses (Thermodynamics of living systems [BME 335], Biofluid Mechanics [BME 301], Mass Transport for Biomedical Engineers [BME 482] and Quantitative Aspects of Cell and Tissue Engineering [BME 424]), and 3) a new BME elective for MI and NE UG tracks which may potentially allow these students to register for and apply upper level C&T Engineering track courses as BME Electives.

Current changes to the Medical Imaging Track:

- Replacement of ECE 437 **with** ECE 437 or BME Elective (semester 7)
- Replacement of PHYS 224 or CHEM 239 or BIOL 403 **with** PHYS 224 or CHEM 239 (semester 7)

Rationale: Currently, the MI BME UG curriculum limits students to 1 BME elective course. Students currently must choose EITHER UG research or one advanced BME Imaging elective course as an Elective.

Current changes to the Neural Engineering Track

- Replacement of Technical Elective or CHEM 239 or BIOL 403 **with** Technical Elective or BME Elective.

Rationale: To provide more flexibility for students to choose between a technical or a BME Elective. By default, CHEM 239 and BIOL 403 are technical elective courses and may serve as technical electives for pre-med students.

Previous 2 year (AY 2019-2020 & AY 2020-2021) changes for all tracks: None