Pre-Approved Technical Elective (TE) Course Options for Bioengineering: Biotechnology Program

The Technical Elective (TE) requirement is satisfied by courses totaling 8 units, of which 6 units must have “engineering” as its primary component. Courses shown below having “engineering” as its primary component are “BENG” courses not required for the Bioengineering: Biotechnology major and other 4-unit, upper-division (100 series) courses taken for a letter grade and taught in one of the departments in the Jacobs School of Engineering. Note: any prerequisite courses must also be completed and not all courses are offered each year/quarter.

BENG 101 – Foundations of Biomedical Imaging
BENG 109* – Statics and Dynamics (If BENG 109 is completed, may not take MAE 130A/SE 101A or MAE 130B/SE 101B.)
BENG 110 – Continuum Mechanics
BENG 112AB – Biomechanics I and II
BENG 140AB* – Bioengineering Physiology I and II (BTEC students are advised not to take either course, as per ABET, each course may only count toward fulfilling 2 of the required 6 units which must be “engineering-related.”)
BENG 186B – Principles of Bioinstrumentation Design
BENG 199 (2 quarters with same faculty)
ENG 100A and 100L (must total 8 units)
MAE 105 – Intro to Mathematical Physics
MAE 107 – Computational Methods in Engineering
MAE 118 – Intro to Energy Systems
MAE 131A/SE 110A – Solid Mechanics
MAE 140 – Linear Circuits
MAE 143A – Signals & Systems
MAE 143B – Linear Control
MAE 150 – Computer-Aided Design
NANO 101 – Intro to Nanoengineering

BENG 199, Independent Study Research Courses. BENG students interested in doing research via BENG 199 courses must enroll with the same faculty member in two quarters of BENG 199. It is preferred (though not required) that the two quarters be taken sequentially. Completion of two quarters of BENG 199 will satisfy both TE requirements—(a.) completion of a total of 8 units and (b.) 4–6 of the 8 units must be “engineering-related.”

“Teams in Engineering Sciences” (TIES) Courses. ENG 100A and 100L courses are considered “engineering-related” courses. Students will receive 8 units of TE credit after passing 1 quarter of ENG 100A (2 units) taken concurrently with ENG 100L (2 units), and passing 2 additional quarters of ENG 100L.

“Science” Courses. Any portion of the TE requirement not fulfilled by “engineering” courses must be fulfilled by “science” courses which are 4-unit, upper-division (100 series) courses taken for a letter grade, not required for the BTEC major and taught in the Division of Biological Sciences or in the Chemistry & Biochemistry or Physics departments. Courses having a lab component are acceptable.
BENG 196, BENG 197, or BENG 198 courses may not be used to satisfy TE requirements in any majors in the Department of Bioengineering.