

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.