

PRE-APPROVED TECHNICAL ELECTIVE (TE) COURSE OPTIONS FOR THE BIOENGINEERING PROGRAM

The Technical Elective (TE) requirement is satisfied by courses totaling 8 units, of which 4 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* 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 123 – Systems Biology & BENG
BENG 160 – Chemical & Molecular BENG Techniques
BENG 161A – Bioreactor Eng.
BENG 161B – Biochemical Eng.
BENG 166A – Cell & Tissue Eng.
BENG 168 – Biomolecular Eng.
BENG 199 (**2 quarters with same faculty**)
CENG 101A OR MAE 101A – Fluid Mechanics
ENG 100A and 100L (**must total 8 units**)
MAE 105 – Intro to Mathematical Physics
MAE 118 – Intro to Energy Systems
MAE 131A OR SE 110A– Solid Mechanics
MAE 143A – Signals & Systems
MAE 143B – Linear Control
MAE 149 – Sensor Networks
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 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 *BENG* 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!