<table>
<thead>
<tr>
<th>BioE 101/110</th>
<th>Systems Biology</th>
<th>Autumn</th>
<th>Covert</th>
<th>Lecture</th>
<th>Holding office hours, Grading homeworks, Grading exams, Writing problems for exams, Leading discussion sections, Leading review sessions, Posting course materials to coursework</th>
<th>1 full-time and 1 half-time TA or 3 half-time TAs</th>
<th>Should have taken BioE101/110 and received an 'A'.</th>
</tr>
</thead>
</table>
| BioE 141 A   | biodesign Project | Autumn | Carman, Yang, Watt, Rogers, Venck | Lecture and Laboratory | Mentoring student project teams, hosting/providing prototyping/mentoring in the lab, assignment grading and feedback, leading workshops, setting up experiments, ordering and preparing (e.g. aliquoting) lab supplies, preparing course materials, managing online course content | 4 half-time TAs | Experience with needs-based, open-ended student design projects (especially using BioDesign process), e.g., via capstone engineering design courses.
Knowledge of using Biodesign process (especially with teams), e.g., via capstone engineering design courses, Experience with some or all of the following techniques/methods: Electronics prototyping and debugging (e.g. Arduino, breadboarding, oscilloscopes); Mechanical prototyping and design (e.g., 3D printing, laser cutting, sample machining); Basic biological cloning and design (e.g., PCR, DNA assembly, etc.); Standard biological assays (e.g., enzymatic and fluorescent reporter assays, cell culture, etc.). Data analysis and presentation; Interest and ability to work outside of specific areas of expertise. |
| BioE 291     | Principles and Practice of Optogenetics for Optical Control of Biological Tissues | Autumn | Drissart | Lecture and Laboratory | Holding office hours, Grading homeworks, Grading exams, Leading discussion sessions, Editing and/or developing lecture slides and presentation material, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework, Setting up experiments, Ordering and preparing (e.g. aliquoting) lab supplies | 1 half-time TA | Required experimental expertise in optogenetics (in vitro and in vivo)– viral transduction, electrophysiology, animal behavior, and specialized surgical lab skills. Familiarity with the historical and current optogenetics literature. |
| BioE 300 B   | Engineering Concepts Applied to Physiology | Autumn | Covert | Lecture | Holding office hours, Grading homeworks, Grading exams, Writing problems for homework, Writing problems for exams, Leading discussion sections, Leading review sections, Posting course materials to coursework | 1.5 full-time TAs OR 3 half-time TAs | Should have taken BioE 300B and received an 'A'. Should be reliable and creative. |
| BioE 301 A   | Molecular and Cellular Engineering Lab | Autumn | Lin | Laboratory | Holding office hours, Grading homeworks, Leading discussion sessions, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework, Setting up experiments, Ordering and preparing (e.g. aliquoting) lab supplies | 4 half-time TAs | Should have taken BioE 301A and received an 'A'. Students who have pursued research in the course subject area (molecular biology, molecular engineering, etc) are desired. Organization skills and advanced preparedness are key. |
| BioE 361     | Biomaterials in Regenerative Medicine | Autumn | Heilshorn | Lecture | Holding office hours, Grading homeworks, Leading discussion sessions, Mentoring students on independent projects, Posting course materials to coursework | 1 half-time TA | Should be well-versed in the scientific literature of 3D stem cell culture, biomaterials synthesis, and cell-matrix interactions. Must be able to mentor the students on independent projects. Will lead weekly discussion sessions with the students, helping them prepare for a TA. |
| BioE 44      | Fundamentals of Engineering Biology Lab | Autumn, Spring | Qi, Smoke, Rogers | Lecture and Laboratory | Holding office hours, Grading homeworks, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework, Setting up experiments, Ordering and preparing (e.g. aliquoting) lab supplies | 7 half-time TAs (4 in fall and 3 in spring) | BioE 44 or equiv. Molecular biology experience (e.g., knowledge of central dogma), experience working with E. coli wetlab cloning tools (e.g., plasmids, transformation, miniprep, PCR, gel electrophoresis, cloning isolation, good microbiological technique), spectroscopy, microscopy, fluorescence, mammalian cell culture, cytochemical culture, Bacterial assay experience a plus. Computer experience: online research and molecular biology tools such as Pubmed, GoogldScholar, Primer3, Optimizer, Biobricks Parts Registry, and BLAST. Computer-aided plasmid design software (Lasergene, VectorNTI, Gene Designer 2.0, Geneious) or similar software experience a plus. Additional skills: Familiarity with scientific literature, reading, and writing. Students will be coming up with their own projects so TAs should have experimental design experience and comfort with planning and/or improvising experiments as needed (e.g., positive and negative controls). Brainstorming experience a plus. |
| BioE 42      | Physical Biology of Cells | Spring | Huang | Lecture | Holding office hours, Grading homeworks, Grading exams, Writing problems for homework, Writing problems for exams, Leading discussion sections, Posting course materials to coursework | 1.5 full-time TAs OR 3 half-time TAs | Strong background in Math and Physics, and some biology background. E.g., a course based on Phil Nelson's Physical Biology book, would be good preparation for a TA. |
| BioE 51      | Anatomy for Biomedical Engineers | Spring | Srivastava | Lecture and Laboratory | Holding office hours, Grading homeworks, Grading exams, Mentoring students on independent projects, Posting course materials to coursework. Conducting lab stations and tutorials | 5 half-time TAs | Should have taken either SURG 203, SURG 101, or BioE 51 and performed well. Course requires two medical students and two students who have taken BioE 51. Should have excellent knowledge of cadaver based human / clinical anatomy and background in bioengineering. |
BioE 80 Introduction to Bioengineering
Spring
Irini, Liphardt
Lecture
Holding office hours, Grading homeworks, Grading exams. Posting course materials to coursework, Setting up experiments 1 full-time TA 1 half-time TA

BioE 103 Systems Physiology and Design
Spring
Deisseroth, Taylor, Rogers
Lecture
Holding office hours, Grading homeworks, Grading exams, Writing problems for homework, Writing problems for exams, Editing and/or developing lecture slides and presentation material. Printing course materials for lecture/lab, Posting course materials to coursework 1 full-time TA OR 2 half-time TAs

BioE 131 Ethics in Bioengineering
Spring
Altman, Magnus
Lecture
Holding office hours, Grading homeworks, Writing problems for homework, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework 5 half-time TAs

BioE 244 Advanced Frameworks and Approaches for Engineering Integrated Genetic Systems
Spring
Endy, Smoke
Lecture
Holding office hours, Grading homeworks, Writing problems for homework, Leading review sessions, Posting course materials to coursework, look over and provide comments on exams 1 half-time TA

BioE 260 Tissue Engineering
Spring
Yang
Lecture and Laboratory
Holding office hours, Grading homeworks, Grading exams, Writing problems for homework, Writing problems for exams, Leading discussion sections, Leading review sessions, Mentoring students on independent projects, Posting course materials to coursework 2 half-time TAs

BioE 301C Medical Devices Lab
Spring
Lee
Lecture and Laboratory
Holding office hours, Grading homeworks, Writing problems for homework, Grading exams, Writing problems for homework, Posting course materials to coursework, Setting up experiments, Ordering and preparing (e.g. aliquoting) lab supplies, Ordering supplies and parts 1 half-time TA

BioE 211/311 Biophysics of Multi-cellular Systems and Amorphous Computing
Spring
Riedel-Kruse
Lecture and Laboratory
Homework preparation, Grading homeworks, help with general logistics. 1 half-time TA

BioE 371 Global Biodesign: Medical Technology in an International Context
Spring
Pletzsch, Yock, Doshi, Shen, Maini
Lecture
Holding office hours, Grading homeworks, Writing problems for homework, Writing problems for exams, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework 1 half-time TA

BioE 374B Biodesign Innovation: Concept Development and Implementation
Spring
Yock, Brinton, Watkins
Lecture
Holding office hours, Grading exams, Leading discussion sections, Editing and/or developing lecture slides and presentation material, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework 1 half-time TA

Bio 41 Physical biology of Macromolecules
Winter
Prakash
Lecture
Holding office hours, Grading homeworks, Grading exams, Writing problems for homework, Writing problems for exams, Leading discussion sections, Leading review sessions, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework 1.5 full-time TA OR 2 half-time TAs

BioE 123 Biomedical System Prototyping Lab
Winter
Bohnen, Riedel-Kruse, Venook
Laboratory
Holding open lab hours, Grading lab assignments and in-lab demos, Leading workshops/tutorial sessions, Posting course materials to coursework, Setting up experiments, Ordering and preparing (e.g. aliquoting) lab supplies, Printing experiments, Building/testing prototypes, Writing lab handouts, Helping students debug experiments/projects. 4 half-time TAs

Desire experienced TAs who can help students make sense of deep engineering and physics concepts. Ideally, TAs would collectively represent diverse experiences and backgrounds. For example, TAs with expertise in synthetic biology, biophysics, and programming are desired.

Course requires one TA with MD background and one TA with engineering background. The MD TA should be an advanced medical student or resident with engineering training. The engineering TA should be an advanced BioE student with strong undergraduate engineering training and experience in computational modeling with MATLAB/Python.

Strong writing skills are mandatory, with some familiarity with ethics desired. It is critical that the TAs have strong organizational skills and be dedicated to reading and carefully commenting on writing. TAs would ideally have an interest in discussing the ethical implications of biotechnology, and encouraging students to do the same.

Should have expertise and strong skill set in synthetic biology. Ideally, previously taken BioE 244 or conducting research in the field of synthetic biology. Need knowledge-base in the field and expertise with Matlab (ideally), in addition to other programs including plasmid construction software (like APE) and enzyme databases (like KEGG).

Should have taken BioE 260 and performed well, or have taken courses in biology (development biology), biomaterials, and engineering. An important portion of this course is to develop research proposals for solving authentic tissue engineering problems, thus mature students with substantial research expertise in the field are desired to effectively guide the project development.

Expertise and in-depth knowledge of various medical devices (e.g., CT, Xray, Ultrasound, EEG, MRI, ECG, etc). Has taken the course previously and done well in it.

Should have taken BioE 371 and have an interest in medical technology development and, ideally, in global health topics. Student should have excellent communication and organizational skills, and possess the ability to work independently. Previous TA experience is preferred.

Should have completed BioE 374 A/B and have a strong understanding of the Biodesign process.

Passion and love for teaching; good analytical and thinking skills. Deep interest in physical biology and physics of living matter.

Experience with designing, building, and testing/debugging electromechanical systems. Skills should include comfort with: discrete electronics (e.g., passive filters, op-amps, etc.), microcontrollers (especially Arduino), MATLAB and/or Python, and rapid prototyping tools (CAD, 3D printing, laser cutting). Dedication to helping students develop independent prototyping skills and complete ambitious design projects in a fun and time-intensive lab course.
| BioE 220 | Intro to Imaging and Image-based Human Anatomy | Winter | Butts Pauly | Lecture | Holding office hours, Grading homeworks, Leading discussion sessions | 1 half-time TA |
| BioE 224 | Probes and Applications for Multi-modality Molecular Imaging of Living Subjects | Winter | Levin, Mowley | Lecture | Holding office hours, Grading homeworks, Writing problems for homework | 1 half-time TA |
| BioE 281 | Biomechanics of Movement | Winter | Delp | Lecture and Laboratory | Holding office hours, Grading homeworks, Writing problems for homework | 1 full-time TA OR 2 half-time TAs |
| BioE 300A | Molecular and Cellular Bioengineering | Winter | Bryant | Lecture | Holding office hours, Grading homeworks, Writing problems for homework | 1.5 full-time TAs OR 3 half-time TAs |
| Byott: 201B | Clinical Needs and Technology | Winter | Daniels | Lecture and Laboratory | Mentoring students on independent projects, Posting course materials to coursework | 1 half-time IA |
| BioE 301D | Microfluidic Devices Lab | Winter | Fordyce, Quake | Lecture and Laboratory | Prior to the course: helping build additional pneumatic control setups for testing microfluidic devices; Help students with AutoCAD design of proposed device layouts and preparing photolithography masks; Train students in general photolithography techniques (spinning, baking, exposing, and developing photoresists on silicon wafers in the clean room; general troubleshooting); Train students in general PDMS device production techniques (spinning, baking, aligning, and punching holes in PDMS devices, general troubleshooting); Train students in setting up and testing microfluidic devices. | 1 half-time TA |
| BioE 304A | Biodesign Innovation: Needs Finding and Concept Creation | Winter | Yock, Brinton, Watkins | Lecture | Holding office hours, Grading exams, Leading discussion sessions, Editing and/or developing lecture slides and presentation material, Mentoring students on independent projects, Printing course materials for lecture/lab, Posting course materials to coursework | 1 half-time IA |