

# M.S. Plan I Curriculum

The M.S. graduate curriculum emphasizes physiology, tissue engineering, biomechanics, and transport phenomena. Associated courses are available on campus in applied mathematics, physics, chemistry, biology, solid and fluid mechanics, electronics, computers, information sciences, system analysis, neurosciences, pathology, pharmacology, and clinical subjects. Faculty advisors are available to assist the students in planning for their courses and research.

All courses must be taken for letter grade.

## Required Courses for the M.S. Degree: Plan I

### 1. Core Courses (total of six required):

*Engineering Physics: select three courses (all courses are 4 units)*

- BENG 202/ CSE 282. Bioinformatics II: Introduction to Bioinformatics Algorithms
- BENG 203/ CSE 283. Genomics/ Proteomics/ Network Biology
- BENG 211. Systems Biology and Bioengineering I: Biological Components
- BENG 216. Neuromorphic Integrated Bioelectronics
- BENG 221. Mathematical Methods for Bioengineering
- BENG 223. Thermodynamics, Statistical Mechanics, and Interfacial Phenomena in Living Systems
- BENG 226. Foundations of Bioengineering I: Tissue and Cell Properties
- BENG 227. Transport Phenomena in Living Systems
- BENG 280A. Principles of Biomedical Imaging

*Life Sciences: select three courses (all courses are 4 units)*

- BENG 204. Systems Medicine: Data Analytics and Mechanisms
- BENG 230A. Biochemistry
- BENG 230B. Cell and Molecular Biology
- BENG 230C. Cardiovascular Physiology
- BENG 230D. Respiratory and Renal Physiology
- BENG 232. Musculoskeletal Health, Injury, and Disease
- BENG 234. Introduction to Neurophysiology: Molecules to Systems
- BENG 241A. Tissue Engineering and Regenerative Medicine: Foundations
- BENG 260/ BGGN 260. Neurodynamics
- BENG 285. Statistical Learning in Bioinformatics

### 2. Seminars (both required):

- BENG 281. Seminar in Bioengineering – 1 unit (F,W,S) *Must take each quarter during first year*
- BENG 282. Seminar: Faculty Research – 1 unit (F)

### 3. Elective Courses (three required):

Plan I students are required to complete three elective courses to fulfill their degree requirements. All graduate courses offered in the Bioengineering Department (other than the 6 required courses) may be used to fulfill the elective course requirement. Other courses outside of the department may be approved. Consult with the graduate advisor.

### 4. Research (12 units required):

- BENG 299. Graduate Research