Neural Engineering Curriculum Map

Suggested Sequence by Semester

Fall Year 1 (18 hrs)	Spring Year 1 (18 hrs)	Fall Year 2 (18 hrs)	Spring Year 2 (16 hrs)	Fall Year 3 (12 hrs)	Spring Year 3 (15 hrs)	Fall Year 4 (15 hrs)	Spring Year 4 (16 hrs)
MATH 221 (4) Calculus I	MATH 231 (3) Calculus II	MATH 241 (4) Calculus III	MATH 285 (3) Intro Diff Eq	NE 330 (3) Neuroscience for Engineers	NE 420 (3) Neural Interface Eng	NE 412 (3) Neural Data Analysis	NE 402 (4) Neural Eng Senior Design
ENG 100 (1) Engineering Lecture	PHYS 211 (4) Univ Physics, Mechanics	PHYS 212 (4) Univ Physics, Elec & Mag	CHEM 232 (4) Organic Chemistry I	NE 410 (3) Neural Circuits & Systems	NE 422 (3) Intro to Neuroimaging	NE 430 (3) Neural Cell & Tissue Eng	Neural Eng Tech Elec (3)
NE 100 (2) Intro to Neural Engineering	MCB 150 (4) Molec & Cellular Basis of Life	PSYC 100 (4) Introductory Psychology	BIOE 205 (3) Systems in Bioengineering	Neural Eng Tech Elec (3)	Neural Eng Tech Elec (3)	NE 431 (4) Neural Cell & Tissue Eng Lab	GenEd Elec (3)
RHET 105 (4) Principles of Composition	CHEM 104 (3) General Chemistry II	BIOE 210 (3) Linear Algebra for Biomedical Data Science	BIOE 310 (3) Comp Tools for Bio Data	GenEd Elec (3)	Free Elec (3)	Neural Eng Tech Elec (3)	Free Elec (3)
GenEd Elec (3)	CHEM 105 (1) General Chem Lab II	MCB 250 (3) Molecular Genetics	MCB 252 (3) Cells, Tissue, & Development		GenEd Elec (3)	Free Elec (2)	Free Elec (3)
CHEM 102 (3) General Chemistry I	CS 101 (3) Intro to Comp						
CHEM 103 (1) General Chem Lab I							

Note – not taking courses as advised may result in a delayed graduation date.
Students are responsible for any impact resulting from not following departmental advising.

General Education Requirements

- ❑ 6 hours in Humanities
- ❑ 6 hours in Social/Behavioral Sciences
- ❑ 1 Advanced Composition Course
- ❑ Language Other Than English
- ❑ 1 Western Comparative Cultures Course
- ❑ 1 Non-Western Comparative Cultures Course
- ❑ 1 US Minority Cultures Course

Neural Engineering Technical Electives

- **Bioengineering:**
- **BIOE 420 – Intro Bio Control Systems (3 hr)**
- **BIOE 424 - Preclinical Molecular Imaging (3 hr)**
- **BIOE 430 – Intro to Synthetic Biology (3 hr)**
- **BIOE 450 - Introduction to Quantitative Pharmacology (3)**
- **BIOE 460 – Gene Editing Lab (3 hr)**
- **BIOE 476 – Tissue Engineering (3 hr)**
- **BIOE 483 – Biomedical Computed Imaging Systems (3 hr)**
- **BIOE 484 – Statistical Analysis of Biomedical Images (3 hr)**
- **BIOE 485 – Comp Math for Machine Learning & Imaging (4 hr)**
- **BIOE 486 – Applied Deep Learning for Biomedical Images (3 hr)**
- **BIOE 487 – Stem Cell Bioengineering (3 hr)**
- **BIOE 488 – Applied High-Performance Comp for Imaging Science (3 hr)**
- **BIOE 489 – Regulations, Ethics, & Logistics in Biomedical Applied Learning (3 hr)**
- **BIOE 498 HG – Soft Robotics (3 hr)**
- **BIOE 498 AL – Immunoengineering (3 hr)**

- **Electrical & Computer Engineering:**
- **ECE 416 – Biosensors (3 hr)**
- **ECE 442 – Silicon Photonics (3 hr)**
- **ECE 459 – Communications Systems (3 hr)**
- **ECE 460 – Optical Imaging (4 hr)**
- **ECE 461 – Digital Communications 3 hr)**
- **ECE 467 – Biophotonics (3 hr)**
- **ECE 470 – Intro to Robotics (4 hr)**
- **ECE 480 – Magnetic Resonance Imaging (3 hr)**

- **Mechanical Engineering:**
- **ME 483 – Mechanobiology (4 hr)**

- **Psychology:**
- **PSYC 210 – Behavioral Neuroscience (3 hr)**
- **PSYC 404 – Cognitive Neuroscience (3 hr)**
- **Physics:**
- **PHYS 475 – Intro to Biophysics (3 hr)**