

# Certificate in Neural Engineering-Systems

---

The Certificate in Neural Engineering-Systems will enable students to gain both a fundamental and applied understanding of brain signals, a rapidly growing component of neural big-data research. The program includes the study of basic concepts related to modeling the nonlinear electrical circuits in the brain which use concepts from signal processing, modeling and control. Students will gain expertise in understanding the fundamentals required for the design of neural prostheses, and brain machine interfaces.

## Requirements

A total of 12 credit hours are required to obtain the certificate. At least one course must be neuro-related.

### Core Courses (at least 6 credit hours)

BIOL_EN 4540	Neural Models and Machine Learning	3
or BME 4540	Neural Models and Machine Learning	
ECE 4310	Feedback Control Systems	3
or BIOL_EN 4310	Feedback Control Systems	
or MAE 4750	Feedback Control Systems	
ECE 4590	Computational Neuroscience <sup>required</sup>	4
or BIOL_EN 4590	Computational Neuroscience	
or BIO_SC 4590	Computational Neuroscience	
or BME 4590	Computational Neuroscience	
or CMP_SC 4590	Computational Neuroscience	

### Support Courses (at least 6 credit hours)

Any of the three courses listed above not taken		
PSYCH 2210	Mind, Brain, and Behavior	3
ECE 2017	World of Neuroscience	1
or CMP_SC 2017	World of Neuroscience	
MPP 3202	Elements of Physiology	5
ECE 4830	Introduction to Digital Signal Processing	3-4
BIOL_EN 4070	Bioelectricity	3
BIOL_EN 4075	Brain Signals and Brain Machine Interfaces	3