

# Certificate in Neural Engineering-Signals

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The Certificate in Neural Engineering-Signals will enable students to gain both 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 brain waves, recording techniques and to types of noise. The student will also gain expertise in the usage of signal processing concepts in applications ranging from detecting the onset of epilepsy in LFP and EEG signals to the design of 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)

ECE 2100	Circuit Theory I	4
or ECE 3830	Signals and Linear Systems	
BIOL_EN 4540	Neural Models and Machine Learning	3
or BME 4540	Neural Models and Machine Learning	
ECE 4830	Introduction to Digital Signal Processing	3-4

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

Any of the three courses listed above not taken		
ECE 2001	Experimental Course	1
ECE 2017	World of Neuroscience	1
or CMP_SC 2017	World of Neuroscience	
PSYCH 2210	Mind, Brain, and Behavior	3
MPP 3202	Elements of Physiology	5
ECE 4310	Feedback Control Systems	3
or BIOL_EN 4310	Feedback Control Systems	
or MAE 4750	Feedback Control Systems	
BIOL_EN 4075	Brain Signals and Brain Machine Interfaces	3
BIOL_EN 4070	Bioelectricity	3
ECE 4490	Introduction to Computational Neural Engineering	3