Graduate Certificate in Neural Engineering-Signals, Systems and Machine Learning

The Graduate Certificate in Neural Engineering–Signals, Systems and Machine Learning will enable the student to gain both fundamental and applied understanding of brain signals and systems, and machine learning schemes in this 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, systems modeling and control disciplines. The students will gain expertise in understanding the fundamentals of signals, systems and machine learning tools for "reverse engineering the brain", and also for the design of neural prostheses, and brain machine interfaces.

Requirements

Students will need to complete 12 credit hours to earn the certificate.

Required Courses (select two courses)*		6
ECE 7540	Neural Models and Machine Learning	3
or CMP_SC 7540	Neural Models and Machine Learning	
ECE 7310	Feedback Control Systems	3-4
or BIOL_EN 7310	Feedback Control Systems	
or ECE 7830	Introduction to Digital Signal Processing	
ECE 7590	Computational Neuroscience	4
or CMP_SC 7590	Computational Neuroscience	
or BIOL_EN 7590	Computational Neuroscience	
Support Courses		**6**
Can select one of the 7000-level courses from above		3
ECE 8810	Advanced Digital Signal Processing	3
ECE 8860	Probability and Stochastic Processes for Engineers	3
ECE 8570	Neural Dynamics and Communication	3
or CMP_SC 8570	Neural Dynamics and Communication	
ECE 8580	Machine Learning in Neuroscience	3
or CMP_SC 8580	Machine Learning in Neuroscience	

* Core courses need to be taken before or parallel to the elective courses.