

# Attention!

This is a *representative* syllabus.

The syllabus for the course when you enroll may be **different**.

Use the syllabus provided **by your instructor** for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given semester.

# Autumn 2014 New Course Announcement

## ECE 5194.03: Neuroengineering and Neuroprosthetics



### General Information

<b>Level:</b>	Graduate, Undergraduate
<b>Course No.:</b>	ECE 5194.03
<b>Course Title:</b>	Neuroengineering and Neuroprosthetics (Neur Eng & Prosth)
<b>Credits:</b>	3
<b>Professor:</b>	Liang Guo, PhD, Dept of Electrical & Computer Engineering, Dept of Neuroscience
<b>Course Description:</b>	This course gives an overview of the broad field of Neuroengineering for graduate and senior undergraduate students with engineering or neuroscience backgrounds. Focusing on neural interfaces and prostheses, this course covers from basic neurophysiology and computational neuronal models to advanced neural interfaces and prostheses currently being actively developed in the field.

### Offering Information

<b>Meeting Dates:</b>	8/27/2014 - 12/9/2014
<b>Days &amp; Times:</b>	MoWeFr 9:10AM - 10:05AM
<b>Room:</b>	Caldwell Lab 0133
<b>Grading Basis:</b>	Letter Grade

### Prerequisites

<b>Prerequisites:</b>	ECE 3050 or NS 3010 or BME 3703 or graduate standing in engineering or neuroscience
<b>Intended Rank:</b>	Junior, Senior, Masters, and Doctoral

### Registration Information

- Graduate students should sign up under catalog number 5194.03 and class number 33104.
- Undergraduates should sign up under catalog number 5194.03 and class number 33099.

- The course will appear as "group studies."

## **Course Details**

**Course Goals:** Learn how engineering principles are integrated with neuroscience foundations in the development of advanced neuroprostheses

**Course Topic List:**

- Overview of Neuroengineering
- Neuroscience Basics
- Computational Neuronal Models
- Neural Interfacing Technologies
- Overview of Neuroprosthetics
- Brain Computer Interface
- Deep Brain Stimulation
- Retinal Prosthesis
- Functional Electrical Stimulation
- Optogenetics
- Neural Imaging
- Neural Tissue Engineering
- Regulatory and Ethic Issues

## **Grades**

<b>Homework:</b>	20%
<b>Midterm 1:</b>	20%
<b>Midterm 2:</b>	20%
<b>Final Project:</b>	40%

## **Representative Textbooks and Other Course Materials**

Lecture notes