Methods in Neuroscience (Biol 6335)
Syllabus

This course will consist of 5 parts:

PART I:
14 weeks: lectures (150 minutes per week) as follows

Module 1: Introduction (IACUC and IBR, responsible conduct of research)
Module 2: Behavior Testing*
Module 3: Neuropharmacology*
Module 4: Receptor Binding Techniques: Auto radiography and Biochemistry*
Module 5: Stereotaxic Surgery: Histological Techniques, Brain Dissection
Module 6: Track Tracing (Neuronal Tracking)
Module 7: Immunohistochemistry: Light Microscopy and Image Analysis*
Module 8: Electron Microscopy
Module 9: Electro physiology: Single Cell*
Module 10: Electro physiology: Slices*
Module 11: Isolation and characterization of Neurotransmitters (HPLC, NMR and Mass Spec)
Module 12: Confocal Microscopy and Intracellular Calcium Measurements*
Module 13: Functional MRI*
Module 14: Use of modern molecular biology

*Various statistic analysis techniques will be utilized along with these methods.

PART II:
Four additional invited lectures will be presented in conjunction with Neuroscience seminars.

PART III:
1 week for two one hour mid-term exams.

PART IV:
1 week for selected topic discussion and student presentations.

PART V:
Final EXAM will be given in the University Finals Week.

Required Text:
Principles of Neural Science, 4th Ed., E.R. Kandel, J.H. Schwartz, T.M. Jessell (Eds.), McGraw Hill, 2000
Selected articles from scientific publications including:
Science, Nature, J of Neurosciences, Proceedings of the National Academy of Sciences, Brain Research, Neuron, etc will be included as reading assignment.
The materials on both text and assigned readings will be included on the test.
Attendance:

Students are expected to attend all lectures. In addition, there will be selected invited lectures that will be presented in conjunction with the Neuroscience Seminars. The materials presented in these lectures will also be included on the tests. If a lecture or test is canceled due to inclement weather, that lecture material or test will be given at the next scheduled lecture period.

Examination and Grading:

Exams:

2 one-hour exams
1 final exam

Please note that all exams are cumulative. Make-up exams will only be given if the student has a valid, serious excuse. Students are also required to prepare a research proposal on selected topics of Neuroscience. In addition, each student will be required to give a 10-15 minute presentation on this proposal, followed by a 3-5 minute discussion.

Grading Policy:

Final grades will be determined as follows:
30% final (cumulative and comprehensive)
20% hour exam
20% hour exam
20% proposal
10% attendance and participation

The student must attain:
90% or more to attain an A
85-89% for a B+
80-84% for a B
75-79% for a C+
70-74% for a C
A grade less than 70% will result in failing.

Grades may be obtained in the instructor's office.