

**Introductory Laboratory in Neuroscience**  
**NEUR-2110**

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Office Hours: Mondays and Wednesdays 3:00 - 4:30 PM (and by appointment).

Lab Manual – Laboratory exercises will be made available in the digital dropbox of BlackBoard.

Supplemental readings will be made available and regularly posted on the course BB page.

It is critical that students read the description of the lab experience and supplemental readings **prior** to the experimental session. The supplemental readings for each session are **in addition** to the Lab experience description.

**Course Objectives:**

Present day neuroscience is primarily an empirical field, rich in methodologies and with a diversity of experimental approaches. The laboratory course is meant to provide Neuroscience majors with a better understanding of some of the techniques mentioned in the Introduction to Neuroscience course, their capabilities and limitations, as well as of the concepts and assumptions on which they are based.

**Course Description:**

The Neuroscience Laboratory is designed to provide a hands-on experience of a number of methodologies commonly employed in the research of Nervous System structure and function. We will be using anatomical, electrophysiological and computer simulation techniques. We will also have an opportunity to discuss experimental design and conceptual issues relevant to the field.

Attendance is mandatory. Participation is highly encouraged. **No food or drinks in the lab.**

<b>Session</b>	<b>Group A</b>	<b>Topic</b>	<b>Readings</b>
1	Jan 22 (23)	Sheep Brain Dissection	
2	Jan 29 (30)	Micrographs and histology of lesions.	Lapiz & Morilak (2006)
3	Feb 5 (6)	GENESIS -- Neurons	Hodgkin and Huxley theory of the AP (Häusser, 2000)
4	Feb 12 (13)	Color vision	Experimental design
5	Feb 19 (20)	GENESIS – Central pattern generators	Neural Networks for Vertebrate Locomotion
6	Feb 26 (27)	Stats color vision	Statistical analysis 1
7	Mar 5 (6)	Gait and attention	Cellphone use while driving.
8	Mar 19 (20)	Analysis of gait	Analysis of motion data.
9	Mar 26 (27)	Oculomotor control	
10	Apr 3 (4)	Stats for gait	Statistical analysis 2
11	Apr 10 (11)	GSR	Cortical control of GSR
12	Apr 17 (18)	Experiment design	
13	Apr 23 (24)	Wrap up and presentations	

<b>Session</b>	<b>Group B</b>	<b>Topic</b>	<b>Readings</b>
1	Jan 22 (23)	Micrographs and histology of lesions.	Lapiz & Morilak (2006)
2	Jan 29 (30)	Sheep Brain Dissection	
3	Feb 5 (6)	Color vision	Experimental design
4	Feb 12 (13)	GENESIS -- Neurons	Hodgkin and Huxley theory of the AP (Häusser, 2000)
5	Feb 19 (20)	Stats color vision	Statistical analysis 1
6	Feb 26 (27)	Gait and attention	Cellphone use while driving.
7	Mar 5 (6)	Analysis of gait	Analysis of motion data.
8	Mar 19 (20)	GENESIS – Central pattern generators	Neural Networks for Vertebrate Locomotion
9	Mar 26 (27)	Stats for gait	Statistical analysis 2
10	Apr 3 (4)	Oculomotor control	
11	Apr 10 (11)	Experiment design	
12	Apr 17 (18)	GSR	Cortical control of GSR
13	Apr 23 (24)	Wrap up and presentations	

**Typical laboratory session:** Lab sessions will begin with a description of the experience and its theoretical background. Students should **not** initiate the exercise before the instructor indicates it is appropriate to do so. Following the experience, a short group discussion will be carried out. Be prepared to remain for the full duration of your session.

**Laboratory reports:** reports will be produced by lab team. Assignments need to be turned in individually unless other directions are given. Please make sure to write your group designation on every assignment (e.g. "Tuesday B"). A couple of out-of-lab assignments require data captured in previous activities. Therefore, it will sometimes be necessary to turn in data files the Friday before the lab.....

**Project:** The project will be a team effort and will consist of a written proposal for an experiment employing any of the techniques employed in neuroscientific research. The proposal should include the following sections: Introduction, Methods (including statistical treatment and experiment design), Predicted Results, Discussion and References. You will also present a brief description of your work on the last session of the course.

**Grading:** grading will be based on the laboratory reports, assignments and participation (70%), the presentations (10%) and projects (20%).

### **Disabilities.**

If you have a documented disability and will need accommodations in this class, please speak with me privately early in the semester so I may be prepared to meet your needs. If you have not already registered with Disability Services for Students, contact the office at 999-7411. You must be registered with DSS before I can provide accommodations.

### **Academic Integrity.**

All students are covered by a policy that prohibits dishonesty in academic work. The Academic Integrity Policy (AIP) covers all students who entered Trinity before the fall of 2004. The Academic Honor Code covers all those who entered the fall of 2004 or later.

The Integrity Policy and the Code share many features: each asserts that the academic community is based on honesty and trust; each contains the same violations; each provides for a procedure to determine if a violation has occurred and what the punishment will be; each provides for an appeal process.

The main difference is that the faculty implements the AIP while the Code is implemented by the Academic Honor Council. Under the Integrity Policy, the faculty member determines whether a violation has occurred as well as the punishment for the violation (if any) within certain guidelines. Under the Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified.

Students who are under the Honor Code are required to pledge all written work that is submitted for a grade: "On my honor, I have neither given nor received any unauthorized assistance on this work" and their signature. The pledge may be abbreviated "pledged" with a signature.