# Syllabus: BIO 485: Neurobiology Capstone

Course Title: BIO 485: Neurobiology Capstone

Semester: Fall 2024

Instructor: Prof. Laura Green

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Office Hours: Wednesdays 2:00-4:30 PM OR by appointment

Class Time & Place: Tuesday or Thursday 3:00-4:15 PM in SANCA 765

**Course Description:**

This capstone course focuses on the study of neural circuits and their role in behavior. Students will design experiments, collect and analyze data, and present their findings at the Innovation Showcase. The course includes the development of a project proposal, literature review, experimental design, and a final report.

**Course Objectives:**

Study neural circuits and their role in behavior.

Design and conduct experiments using neurobiological techniques.

Analyze and interpret data in the context of neural function and behavior.

Effectively present the research at the Innovation Showcase.

**Learning Outcomes:**

Gain expertise in neurobiology and experimental design.

Develop practical skills in data collection, analysis, and interpretation.

Improve communication skills through written reports and presentations.

Enhance the ability to manage neurobiology research projects from conception to completion.

**Group Project and Required Subtasks:**

The group project for this course will involve the study of neural circuits and their role in behavior. The project will be broken down into the following subtasks:

1. **Project Proposal (Week 3):**
   - Create a proposal detailing the neural circuits being studied, the research objectives, and the anticipated outcomes. Include a timeline and assign roles to team members.

2. **Literature Review and Hypothesis Development (Weeks 4-6):**
   - Conduct a thorough literature review to understand the current knowledge about the neural circuits. Develop hypotheses based on gaps or unexplored areas in the literature.

3. **Experimental Design and Data Collection (Weeks 7-10):**
   - Design experiments to test the hypotheses. Collect data using techniques such as electrophysiology, imaging, and behavioral assays.

4. **Data Analysis and Interpretation (Weeks 11-12):**
   - Analyze the collected data using statistical methods. Interpret the results in the context of neural function and behavior.

5. **Final Report and Presentation (Weeks 13-15):**
   - Document the entire research process, including challenges, solutions, and outcomes in a final report.
   - Prepare a presentation for the Innovation Showcase that highlights the key aspects of the research and its implications for understanding behavior.

Groups are expected to collaborate closely, meeting regularly to discuss progress and resolve any

issues. Instructor check-ins will be scheduled to provide guidance and feedback.

**Evaluation:**

Class meetings (5): 20 points

Individual meetings (3): 12 points

Project Proposal: 10 points

Literature Review and Hypothesis Development: 15 points

Experimental Design and Data Collection: 18 points

Data Analysis and Interpretation: 10 points

Final Report: 10 points

Presentation: 5 points

Poster: 10 points

Total: 100 points

**Course Policies:**

Attendance and Participation: Regular attendance and active participation are crucial for success in this course. Students are expected to attend all scheduled class meetings and individual sessions. If a student is unable to attend a class, they should inform the instructor in advance and arrange to complete any missed work.

Academic Integrity: All students must adhere to ASU's academic integrity policy. Any form of academic dishonesty, including plagiarism, will be reported and may result in severe penalties, including a failing grade for the course.

Accommodations: Students with disabilities or special needs should contact the ASU Disability Resource Center to arrange appropriate accommodations and notify the instructor as soon as possible.

**Important Dates:**

Class Week 1: Introductions & Project Brainstorming (Aug 26)

Individual Meeting #1: Discuss Ideas and Readings (Sep 4)

Class Week 2: Proposal Presentation & Group Feedback (Sep 18)

Individual Meeting #2: Proposal Feedback & Methods Discussion (Oct 2)

Class Week 3: Revised Proposal Presentation & CERTT Tour (Oct 23)

Individual Meeting #3: Data Analysis & Progress Review (Nov 13)

Class Week 4: Professional Development & Project Discussion (Nov 27)

Innovation Showcase: Final Presentations & Poster Display (Dec 6)