

Department.: PNB

Course number: PNB 263W

Course title: Investigations in Neurobiology

Number of Credits: 3

Contact Person: J. Crivello

Content Area: Grp 3 Science and Technology

Competency Group: Q+W

Catalog Copy: PNB 263WQ. Investigations in Neurobiology First Semester. Three Credits. One 1-hour discussion, one 4-hour laboratory period. Prerequisite: PNB250 OR PNB274-275; ENGL 105 OR 110 OR 111 OR 250. Moiseff. Experimental investigations in neurobiology. Emphasis on designing and carrying out independent research projects and on communicating the results.

Q Criteria:

The laboratory exercises stress the quantitative analysis of neurophysiological data that is acquired using real-time data acquisition systems. Students are taught how analyze these data with respect to specific hypotheses. Each lab exercise focuses on an explicit hypothesis that must be addressed through an independently designed experiment and the appropriate data analysis and presentation. Students are taught how to perform and interpret basic summary statistics (mean and standard deviation) and the use the Student t-test for hypothesis testing. Such analysis is a fundamental component of all of the laboratory exercises. We focus on developing skills with Excel to do basic algebraic manipulation of the data as well as to generate appropriate graphs. Throughout the course, the goal is to use the techniques mentioned for testing hypotheses and to develop the skills to communicate the conclusions to others.

W Criteria:

The writing component is integral to this course. Each lab exercise focuses on an explicit hypothesis that must be addressed through an independently designed experiment and the appropriate data analysis and presentation. Students are taught how to present their results in the format of a standardized scientific paper. This is accomplished by assigning writing assignments that concentrate on specific portions of a scientific report, such as the results section, methods section, discussion, etc. The complexity of these assignments increase in complexity as the semester progresses, beginning with writing figures, progressing to writing a results section, and culminating in writing complete papers. These reports are the primary determinant of grade for the course (~90%) and therefore the student cannot pass the course without passing the W component .

During the discussion component of this course, the instructor discusses how to write scientific papers. Several examples of published papers, dealing with similar experimental topics, are provided to the students as reference. Students receive written comments and grades on each written assignment and are required to submit revised versions that address the comments. The final grade for each assignment is adjusted to reflect the quality and effort put into the revision. One portion of the course includes the writing of research proposals. These proposals are reviewed by the students using a format similar to a peer-review panel and students must write written critiques that are then provided to the authors of the proposals. (Anonymity of the authors and reviewers is maintained throughout the process.)

Role of Grad Students: Graduate students are responsible for teaching the laboratory sections. Graduate students with extensive laboratory research experience are selected. The instructor meets with the graduate assistants weekly to review the course material, train them to do the specific lab exercises, and to review the course goals for the specific exercises. Student papers and quizzes are selected at random and reviewed during these meetings to facilitate the consistency and quality of grading.

Supplementary Information: The syllabus, lab exercises and assignments for this (existing) course can be viewed on-line

(<http://predator.pnb.uconn.edu/courses/PNB263W/fall03/default.html>) or will be supplied to the GEOC as hard-copy upon request.