Course Syllabus

Course Information

Course Number	NSC 4353
Course Title	Neuroscience Laboratory Methods
Term	*Spring 2025*
Times/Room	*10:00am to 12:45pm*/GR 4.708

Professor Contact Information

Professor	Dr. Rafael Granja-Vazquez
Email Address	*Rafael.granjavazquez@utdallas.edu*
Office Hours	Mondays or Wednesdays 11:40AM-12:40 PM by appointment

Teaching Assistant

Fiyinfoluwa Edun
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Course Pre-requisites, Co-requisites, and/or Other Restrictions

NSC 3361 (Behavioral Neuroscience) and either NSC 4352 (Cellular Neuroscience) or NSC 4356 (Neurophysiology). College-level writing skills are strongly recommended.

Course Description

This laboratory course provides hands-on experience in the field of neuroanatomy, behavioral neuropharmacology, and neurophysiology. Additionally, this course is designed to empower students with the skills and knowledge needed to conduct research and write research papers in the format of scientific publication. The course fulfills the advanced writing requirement for Neuroscience majors.

Student Learning Objectives/Outcomes

After completing the course:

- Students will be able to apply scientific methods to design, conduct, and analyze studies using available research methods.
- Students will be able to locate, concisely summarize and compare findings from sources in peer-reviewed literature.
- Students will be able to demonstrate proficiency in writing research reports, in a manner suitable for publication, that includes an abstract, introduction, methods, results, and discussion sections.
- Students will demonstrate competence in effectively collaborating with others.
- Students will be able to write using effective technical requirements, including organization, mechanics, and thesis development.
- Students will be able to demonstrate an ability to conduct research, apply source material, discuss general information, and apply logical processes when writing.

Required Textbooks and Materials

- Day and Gastel, How to Write and Publish a Scientific Paper, 6th edition or later.
- Other readings on ***eLearning:*** Students should print out "Lab Handouts" and bring to class on the days they are to be used. These are posted on the course eLearning web site and will NOT be provided by the instructor.

Assignments

Exams: There are three exams from material covered during class. The first exam covers neuroanatomy, second exam covers neurophysiology and the third exam covers behavioral pharmacology experiments and experimental design.

Papers*:* Students will complete 2 scientific publication-style journal papers. The evaluation process will include first a draft and then a final revised version of the draft for each of the two experiments (for a total of 4 evaluation sessions). Since revision is such a critical part of writing, students will submit an initial draft for each paper as a way of getting feedback on their writing. This is designed to help students with the writing process. Each paper should include a title, abstract, introduction, materials and methods, results, discussion, and published references.

Students should expect to spend a good amount of time with the writing process and should allow themselves enough time to complete and correct their papers prior to the due dates

Submission of drafts and final papers: Students will submit each draft/final version electronically via Turnitin on the eLearning course webpage during the time that the link remains open. **Students should print off a copy of the digital receipt that is displayed when submitting a paper on Turnitin as proof of submission.**

Grading Policy

Exams (30% of grade): Each of the three exams is worth 10% of your final course grade.

Lab exercise/participation score (10% of grade): This is a laboratory class. Participation in and completion of lab activities and exercises will account for 10% of the grade. While there is no formal attendance policy, you cannot complete exercises without being in class. If you are ill, please make arrangements with your professor to attend a different lab section for that weeks' activities. Makeup activities will not be given at other times/sessions.

Research Papers and presentations (60% of grade): Scientific writing is an acquired skill that is learned through much writing and revision. Therefore, as students progress along the writing process, grades based on writing become increasingly weighted. Student papers are assigned a grade based on a grading rubric posted on eLearning and available to students. The grading rubric details all aspects of the paper as well as possible point deductions. Papers are graded for formatting, grammar, comprehension, and content. **Papers must be typed; papers that are not typed and submitted via Turnitin/eLearning will not be accepted or graded- this will result in a zero for that paper assignment. All papers must be submitted to Turnitin once the link has been made available on the course webpage in eLearning.**

The value breakdown for each assignment is listed below:

Open Field paper- first draft: 5%
Open Field paper- final draft: 20%
Behavioral Pharmacology draft and experimental protocol: 5%
Behavioral Pharmacology paper final draft: 20%
Behavioral Pharmacology presentation: 5%
Journal Article presentations: 5%

Final Grades: The plus/minus grading system is used in this course. A+ (97–100), A (94<97), A- (90<94), B+ (87<90), B (84<87), B- (80<84), C+ (77<80), C (74<77), C- (70<74), D+ (67<70), D (64<67), D- (60<64), F (< 60).

Course Policies

All matters related to grades or absences should be emailed to the section instructor of the course.

Make-Up Exams: Make-up exams are at the discretion of the professor. However, exam one covering neuroanatomy cannot be rescheduled.

Late Work and Incomplete Work: All papers are due on the dates listed below unless pre-approved by the instructor. Grading and revision of incomplete and/or late papers are at the discretion of the professor.

Turnitin Submission of papers: All drafts/papers MUST be submitted using Turnitin on eLearning. Students must follow the submission process as given, described in Turnitin. The Turnitin link will automatically close once the availability window has ended. If a student should wait too late to start the submission process, the Turnitin link may close before the paper is submitted. Students are solely responsible for submitting their papers on time. **PAPERS NOT SUBMITTED TO TURNITIN WILL NOT BE GRADED OR GIVEN CREDIT.**

Fabrication — unauthorized falsification or invention of any information or citation in an academic exercise (e.g.: making up sources for the bibliography or faking the results of a laboratory assignment).

Plagiarism — **Plagiarism, especially from the web, from portions of papers for other sections of the class, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism** (see general catalog for details). Other than group data, students are NOT allowed to work together and should NOT share their writing with another student. Each student is expected to write his or her own paper. This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective. All suspected forms of cheating, collusion, and plagiarism will be turned over to Judicial Affairs according to UTD policy.

AI text generation – Generative artificial intelligence is no replacement for your real, organic intelligence. To get the most out of this course, your own ideas and words are always preferred to predictive algorithms. **The use of AI tools like Grammarly to assist with editing is allowed.**

Students should read the handout on Plagiarism: What Every Student Should Know that is posted on the course eLearning page

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are experiencing scholastic difficulty. A portion of the grade for this course is directly tied to your participation in class. It also includes engaging in a group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to university requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures when available. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials
The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Textbooks and some other bookstore materials can be ordered online or purchased at the UT Dallas Bookstore.

Technical Requirements
In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation
This course can be accessed using your UT Dallas NetID account on the eLearning website.
Please see the course access and navigation section of the webpage for more information.
To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage.
UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty that prevents students from completing a time-sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Additional University Resources:

Graduation Help Desk: Resources are available to help you overcome obstacles that may interfere with your progress toward graduation. The Graduation Help Desk, https://oue.utdallas.edu/special-programs/graduation-help-desk, connects you to the resources that will meet your specific needs. To reach a person who can help, email at graduationhelpdesk@utdallas.edu.

Student Accessibility (OSA)

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive accommodation and would like to request it for this course, please discuss it with me and allow one week's advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Student Services Building, SSB 3.200. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:
"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students. Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

ORC Laboratory Methods Requirements

www.utdallas.edu/research/orc/iacuc/facility_access

To continue participation in the Neuroscience Laboratory Methods class (NSC 4353), you must complete the following requirements as listed below by the date stated on the course syllabus. If you currently or recently worked in a animal research lab at UTD, it is likely you have already completed all of the requirements listed below. These requirements are necessary in order to be in compliance with UTD policy.

Step 1: Access Requests and Online Training

- **Online Training**
  - Please visit the BioRAFT website (https://utd.bioraft.com/request-access). Login with your UTD NetID and password.
  - Once you have logged into the BioRAFT system, you can access the training courses from the BioRAFT home screen in the Training section.
  - Please complete the 3 required modules: 1. Ethics in Animal Research, 2. Zoonotic Diseases, 3. Working with the Laboratory Rat, and 4. working in an environment with Hazardous chemicals.
  - If you have trouble seeing the available training, you can try this link to direct you to it https://utd.bioraft.com/node/403323

Step 2: Immunization Requirements and Participation in the Occupational Health Program

- **Tetanus Immunization**
  - Proof of a Tetanus immunization received within the last 10 years is required.
  - If your current immunization is more than 10 years old, you can visit the UTD Student Health Center to be re-immunized.
- **Medical Health Questionnaire and Submission of the Required Documents**
  - All individuals working with animals are required to complete the following survey: https://redcap.link/OccHealth_Intake. You will want to note "LARC" as your "Department/Division/Unit/School", and your instructor as the "Supervisor or Principal Investigator (PI)". Be also be sure to check the box labeled "Animal handling - research activities".
  - A member of the UTSW OccHealth team will be in contact with you shortly after completing the survey to set up your ReadySet account and inform you of your individual requirements (health questionnaire, tetanus shot record, etc.). After the applicable questionnaire(s) have been completed, it is important to email UTD-OH@UTsouthwestern.edu to let UTSW know that all questionnaires/surveys have been completed; this will result in your questionnaire/survey's approval much more quickly.

Once these have been approved by the UTSW team, you will be able to download a "Clearance" form under the "Test Results" -> Results" section of your ReadySet account. A copy of this form will need to be sent to Tyler (tyler.tornblom@utdallas.edu) before you are allowed to handle any animals.

Note: Do not submit any tetanus or shot records to Tyler as these will be added to ReadySet as part of completing the health questionnaire; Tyler is not authorized to receive/view any medical records.

Lab Schedule and Due Dates

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

Week	Class Topic	Postings and Readings	Due Date
Jan 21-24th	Course Introduction (what to expect!) What is Scientific Writing/communication? What does doing science mean? What is a Scientific Paper (AIMRD)/Journal Review/Literature Search/What constitutes a scientific journal/article?	Posting: Course Syllabus/ Handout on Plagiarism Reading: Day & Gastel Chapters.1 & 4	
Jan 27-31	How to Read a scientific article. **AI use Discussion/exercise**, AI and Research ethics What is plagiarism and Fabrication?	Lab Manual Chapter 2. Day & Gastel Ch. 11,12	**Writing Activity due during class**
Feb 3-7	*How to Write a Scientific Paper*- Introduction, Methods, Results, Discussion, (with Title, Abstract, and References)/ **Experiment 1- Part 1:** *Animal Handling & Open Field Introduction*	Lab Manual Ch. 2-4. Day & Gastel Ch. 5,7,9,10,12,15	**Online Training and OHP Clearance Due Before Class**
Feb 10-14	**Experiment I – part 2**: Behavioral Pharmacology-Open-Field (OF) -Understanding experimental Design, p-values and data	Manual Chapter 4	**Open Field Data due in class**
Feb 17-21	Writing workshop 1: Getting the writing process started/Outlining. How to say what you mean/what you shouldn't say (Scientific English) (Writing Exercise- Sentence structure, content and paragraph organization/use and misuse of English, and avoiding jargon…)	Day & Gastel Ch.30-31	**Journal Club presentations**
Feb 24-28	**Neurophysiology** Simnerve simulation (Why does the size of the "action potential" change with increasing stimulus voltage? Can an action potential move in either direction along an axon?)	Manual Ch.5	**Exam 1: Behavioral Pharmacology** **Paper 1 Draft Due**
Mar 3-7	N**europhysiology**: Backyard brains conduction velocity activity In-Class Discussion with Q&A *over* OF Drafts	Manual Ch.5-5	**NCV data**
Mar 10-14	Introduction to Neuroanatomy/ Sheep Brain Dissection	Manual Ch.7	**Paper 1 drafts returned** **Exam 2: Neurophysiology**
Mar 17-21	***No Class: Spring Break***		
Mar 24-28	Introduction to microscopy/Histology Sheep brain review/comparative anatomy (human Vs Sheep), **Introduce Daphnia as a model system.**	Manual Ch. 7-9	**Paper 1 Final draft due** **Microscopy activity**
Mar 31 – Apr 4	**Experiment II-part 1:** Behavioral Pharmacology-Designing an experiment.		**Exam 3: Neuroanatomy**
Apr 7-11	**Experiment II-Part 2:** Behavioral Pharmacology- Execute planned experiment using *Daphnia magna*	Protocol	**Protocol due before class**
Apr 14-18	**Experiment II-Part 3:** Behavioral Pharmacology- Analyze results and draw conclusions	Paper 2 draft	**Lab data review**
Apr 21-25	*Writing Workshop 2*: In-Class Discussion with Q&A *over* Behavioral pharmacology Drafts		**Paper 2 Draft DUE**
Apr 28 – May 2	**Journal club presentations**		**Paper 2 Drafts Returned**
May 5- May 9	**Presentations**		**Paper 2 final DUE**
Final exam week	**No final exam will be given for this course**		