Course Syllabus

Course Information

Course Number/Section	NSC 4353- Section 109
Course Title	Neuroscience Laboratory Methods
Term	Fall 2023
Days/Times/Room	Fridays from 10:00AM–12:45 PM Green Hall 4.708
Instructional Mode	Traditional In-Person Laboratory (Synchronous only)

Instructor Contact Information

Professor of Instruction	Dr. Amy Zwierzchowski-Zarate
Office Phone	972-883-3063 (no voice mail)
Email Address	*amy.zwierzchowski@utdallas.edu*
Office Location	JO 3.314
Office Hours	Thursdays 12:00pm-2:00pm or by appointment
Other Information	Course Web Site can be accessed using your UT Dallas NetID account on the eLearning website

Graduate Teaching Assistant

Aoi Suzuki - aoi.suzuki@utdallas.edu

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

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

Course Description

This laboratory course is designed to introduce students to scientific writing as used in many scientific journal publications and to expose students to some of the various methods used in the field of neuroscience research. Students will carry out experiments, research existing literature related to such experiments, and write up their data in a scientific journal-style paper, similar to that found in a scientific journal. 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.
- Locate, concisely summarize, and compare findings from sources in peer-reviewed literature.
- Demonstrate proficiency in writing research reports, in a manner suitable for publication, that include an abstract, introduction, methods, results and discussion sections.
- Demonstrate competence in effectively collaborating with others.
- Write using effective technical requirements, including organization, mechanics, and thesis development.
- Demonstrate an ability to conduct research, apply source material, discuss general information, and apply logical process when writing.

Course Materials

- **Required Readings:** Students should download the "Lab Handouts" and have during class on the days they are used. These are posted on the course eLearning web site. Printed handouts will NOT be provided by the instructor. **Readings should be completed before class.**
- **Recommended Textbook**: Day and Gastel, How to Write and Publish a Scientific Paper, 6th edition or later.
- **Optional Textbooks**: Cargill and O'Connor, Writing Scientific Research Articles, 2nd edition. Hofmann, Writing in the Biological Sciences, A Comprehensive Resource for Scientific Communication

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Assessments

Participation/Attendance (5%): Attendance and class participation is worth 5% of your final course grade. You will earn your participation points through punctual attendance and participation of that day's activities. Each lab you participate in will earn 0.4% out of 5%. If you are late, leave early, or submit an incomplete assignment, you will earn only 0.2%. See the schedule for details.

Exams (30%): Students will complete three exams, each worth 10% of your final course grade. The first exam covers neuroanatomy and includes fill-in-the-blank, multiple-choice, and true/false questions. The second exam is an essay-type short-answer exam covering neurophysiology. The third exam is an essay-type short-answer exam covering both the open-field experiment and the inhibitory avoidance experiment. You will only need to bring a pencil or pen to take your exam.

Papers (60%): Students will submit two scientific publication-style journal papers. This will include a draft and a final revised version for each of the two experiments. 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. *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:*

+ The first draft covering the open-field (OF) experiment is worth 5% of your final course grade.
+ The final revised OF paper is worth 20%.
+ The second draft covering the inhibitory-avoidance (IA) experiment is worth 10%**.**
+ The final revised IA paper is worth 25%.

Student papers earn grades 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. Each paper should include a title, abstract, introduction, materials and methods, results, discussion, and a minimum of eight published references. Papers are graded for content, formatting, grammar, flow, and comprehension. While no minimum or maximum page number is given, students should anticipate writing at least six double-spaced pages per assignment. ***Papers that are not typed and submitted via Turnitin on time will result in a zero for that assignment.***

Students should expect to spend a good amount of time with the writing process of the course as this type of writing is typically time consuming for most individuals. As such, students should allow themselves enough time to complete and correct their papers prior to the due dates!

Group presentations (5%): Students will be split into groups of 3-4 students. Each group will give a 30 to 45-minute presentation over a published scientific article. Students will choose a paper from a list of articles chosen by the BBS faculty. Each student in the group must take part in giving the oral presentation.

Presentations will be graded on preparation of slides and oral delivery as a group based on the presentation rubric. Presentations not lasting at least 30 minutes or presentations going over the allotted time of 45 minutes will be deducted points. Group presentations will be assigned a grade as a group and not individually. Therefore, it is important that each student contributes equally to doing their part.

Students who fail to participate in the group presentation will earn their group's grade by passing an oral exam over the paper they would have presented.

Grading Scale:

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).

Please note: Grades will not be rounded up and no extra credit will be given to individuals.

Course Policies:

All concerns related to grades or absences should be referred to the section instructor (not the TAs)!

Class Attendance: Students are expected to attend all lab classes in-person. Lab doors close at 10:00am-**DON'T BE LATE!** Students are responsible for completing all assigned readings BEFORE coming to class. Excused absences are at the discretion of the instructor. If you know you will miss a class, you must notify the instructor in advance of the scheduled class. *YOU ARE NOT ALLOWED TO ATTEND ANOTHER LAB SECTION WITHOUT PRIOR APPROVAL FROM BOTH INSTRUCTORS!* Coming to lab late or leaving lab early repeatedly will also count against participation grade. Students coming to lab late on exam days MUST finish the exam at the same time the class is finished.

Classroom Safety: This is a laboratory where we will work with live animals; thus, you must dress accordingly. Legs, midriffs, and toes must be covered. Food and drinks are **NOT** allowed.

Communication: This course utilizes both in-person and online tools for interaction and communication. Grades will be posted as soon as they are available. Student emails will be answered within 3 working days under normal circumstances. In event of classroom emergencies, such as lecture cancellations for a DFW Snowpocalypse, I will send an email to all enrolled in the class.

eLearning: The course syllabus, handouts, and other resources will be posted on elearning, which can be accessed using your UT Dallas NetID account. No portion of these materials may be sold, retransmitted, reposted, duplicated or otherwise used without the express written approval of the author.

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 papers and/or sections of papers are at the discretion of the professor. ***Drafts not turned in by the due date will be deducted one letter grade for every day late (including weekends). If final paper is not turned in by the due date, the draft grade will be used.***

Make-Up Exams: Make-up exams will be given only if you provided verifiable documentation from an authoritative source: a) you were seriously ill, or b) you were detained the day and time of the exam, or c) you made arrangements with me prior to the exam to attend an urgent affair. In any case, you must notify me in advance of the scheduled time of the exam. The practical portion of Exam 1 cannot be rescheduled. Makeup exams will NOT include bonus questions and must be taken within 1 week of returning to campus.

Photography: You are **NOT** allowed to take photos of the sheep brains, human brains, animals, or any experiment! However, you are allowed (and indeed encouraged) to take photos of the notes/information on the dry erase boards.

Turnitin Submission of papers: Students must submit each draft/final version electronically via Turnitin on the eLearning course webpage before the deadline. Students must follow the submission process as described in Turnitin. Students are solely responsible for submitting their papers on time. Once papers are revised, graded, and grades are posted, they will be available in Turnitin via eLearning.

Papers not submitted to Turnitin will not be graded or given credit. *Students should take a screenshot of the digital receipt that is displayed when submitting a paper on Turnitin and save it as proof of submission. Please do not email this to me unless you are facing issues with your submission. If (and only if) you are facing issues, then send me a screenshot along with your paper by email as soon as possible.*

UT Dallas Syllabus Policies and Procedures

Academic Integrity: Academic Dishonesty, including (but not limited to) plagiarism, fabrication, cheating on exams, and sharing or posting exam questions (with or without the correct answers), will not be condoned in my class or at UTD. ***Plagiarism, especially from the web, from portions of papers of classmates or students from other sections, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism***. Other than group data and group presentations, students are NOT allowed to work together and should NOT share their writing with another student. Each student is expected to write their own paper. *Using AI, including ChatGPT, to write parts of your paper is plagiarism.* 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, fabrication, and plagiarism will be turned over to the Office of Community Standards and Conduct for official review according to UTD policy. **Students should read the handout on Plagiarism: What Every Student Should Know posted on the course eLearning page.**

Academic Support Resources: The University of Texas at Dallas provides many academic support resources for all students. Please see http://go.utdallas.edu/academic-support-resources.

Extra Help: This course can be challenging, but very rewarding for students who invest time into writing. My goal is to help every student succeed! I am here to help you as much as possible, but you have to help me to help you. You are welcome and indeed encouraged to meet with me during office hours or by appointment to go over difficult concepts, discuss writing strategies, and review papers and exams.
Note: *the day before the paper is due is too late for that paper…the week before the final is too late for the course…**Plan ahead***!

Graduation Help Desk: Resources are available to help you overcome obstacles that may interfere with your progress toward graduation. The 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 AccessAbility (ARC): 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 AccessAbility Resource Center is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow *at least* **one week** advance notice. I want to help every student success, but have to have time to prepare to help you. 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 ARC: in person at Administration Building, Room 2.224, by phone 972-883-2098, or by email at studentaccess@utdallas.edu.

University Policies: For detailed information about the University of the Texas at Dallas' policies and procedures, please refer to https://go.utdallas.edu/syllabus-policies. This website includes "Resources to Help You Succeed" in addition to the university's policies on Academic Integrity, Accommodations for Students with Disabilities, Copyright, COVID-19, Religious Holy Days, Student Grievance, and Withdrawal from Class.

UTD Creed: ***"As a Comet, I pledge honesty, integrity, and service in all that I do."***

ORC Laboratory Methods Requirements

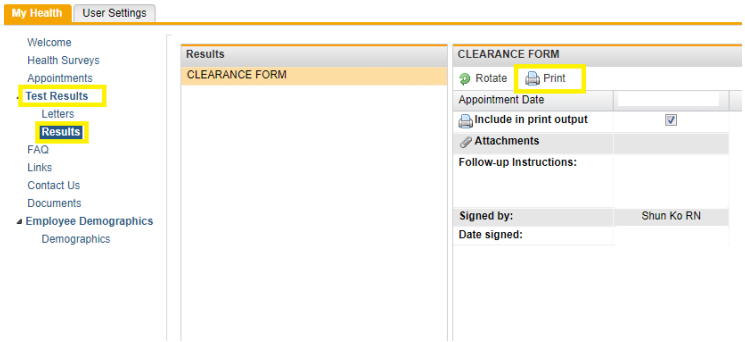
To continue participation in the Neuroscience Laboratory Methods class (NSC 4353), you must complete the following requirements as listed below by the date stated on the course syllabus. If you currently or have recently worked in an animal research lab at UTD, it is likely you have already completed all of the requirements listed below. These requirements are necessary as 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/). 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 Training → Course Directory → Animal Care and Use Course
  - Please complete the 3 required modules: 1. Ethics in Animal Research, 2. Zoonotic Diseases, and 3. Working with the Laboratory Rat
  - You also need to complete Working in an environment with Hazardous chemicals. If more trainings are assigned to you, you are not required to complete them at least for this course.

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 Survey**
  - 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 professor as the "Supervisor or Principal Investigator (PI)". Be also be sure to check the box labeled "Animal handling - research activities".
- **Submitting the Required Documents**
  - 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 Tornblom (tyler.tornblom@utdallas.edu) before you are allowed to handle any animals.

Lab Schedule and Due Dates: NSC 4353-109 Fall 2023
Green Hall 4.708 Fridays from 10:00am - 12:45pm

Class Date	Class Topic	Reading	Due Dates
Aug 25	**Lab 1:** Orientation/Course Introduction What is plagiarism vs fabrication? What is Scientific Writing? a Scientific Paper (AIMRD)? Journal Review/Literature Search	Syllabus Plagiarism Handout *Day&Gastel Ch. 1&4*	**Plagiarism Attestation** **Begin OHP Training & Clearance** **3 OF sources**
Sept 1	**Lab 2:** Introduction to neuroanatomy, Sheep brain dissections, Introduction to microscopy/histology In-class Journal Review	Lab handouts	**Sheep Brain/Microscopy Activity**
Sept 8	**Lab 3:** Sheep brain review/Comparative Anatomy Scientific writing – Title, Abstract, Introduction In-class Journal Review	Assigned Paper #1	**OHP Clearance/Training** **OF Introduction draft**
Sept 15	**EXAM 1 Neuroanatomy** **Lab 4:** Animal Handling Scientific writing –Methods, Results, and Discussion Introduction to behavioral pharmacology – Open Field (OF)	Lab handouts *Day&Gastel 5,7,9-13,28*	**EXAM 1** **OF Methods draft**
Sept 22	**Lab 5:** Behavioral Pharmacology Experiment I: Open Field (OF), Understanding experimental design, data, and p-values	Lab Handout	**OF data/graph & results draft**
Sept 29	**Lab 6:** Scientific Writing Workshop 1 Getting started – sentence structure, content and paragraph organization, use and misuse of English, and avoiding jargon Peer review	*Day&Gastel 30-31* Your paper	**OF Title draft**
Oct 6	**Lab 7:** Scientific Writing Workshop 2 Q&A over OF Drafts, Peer review		**OF Draft Due by 11:59pm**
Oct 13	**Lab 8:** Introduction to Neurophysiology Neurophysiology SimNerve simulation – Part 1	Lab handout	
Oct 20	**Lab 9:** Backyard Brain Activity, SimNerve simulation – Part 2, Q&A over OF Finals	Lab Handout ***OF Drafts returned***	
Oct 27	**EXAM 2 Neurophysiology** **Lab 10:** Behavioral Pharmacology **Experiment II: Part 1** Inhibitory Avoidance (IA) Training latencies – What are we measuring?	Lab handout	**EXAM 2** **IA Data &** **IA Methods Draft** **OF Final Due by 11:59pm**
Nov 3	**Lab 11: Experiment II: Part 2** IA Retention Latencies – What do the data show? Example Journal Club	***OF Finals Returned*** Lab Handout Assigned paper #2	**IA Data/graph & results draft** **Group presentation titles**
Nov 10	**Lab 12:** Scientific Writing Workshop 3 Q&A over IA Draft	Lab Handout	**IA Draft due by 11:59pm**
Nov 17	**Lab 13:** Q&A over IA Finals/Review of OF &IA **Group Presentations/Journal Club**	***IA Drafts returned*** Assigned Papers	
Nov 20	**Fall Break – No Class**		
Dec 1	**EXAM 3 Behavioral Pharmacology** **Lab 14: Group Presentations/Journal Club**	Assigned Papers	**EXAM 3** **IA Final Due by 11:59pm**
Dec 8	**University Reading Day – No Class**		
Dec 11	**Finals Week – No Final will be given for this Lab Course**		

The descriptions and timelines above are subject to change as needed at the discretion of the Professor.