BI410/510 Neurogenetics Syllabus

Tentative Syllabus - any updates will be noted on Canvas and will be sent out to all as an announcement.

The overarching goal of this course is to examine the relationship between genes and behavior. Students will learn both classic and contemporary genetic tools that are utilized by researchers to study neural circuits and behavior involving areas such as courtship, addiction, memory, sleep, aggressive behavior, and other areas of interest as they develop. The course will focus on animal model systems amenable to genetic manipulation and will explore concepts broadly. The course will extensively discuss the relationship among genetics, development, neural circuitry, and behavior. The course is based on primary research literature and will emphasize critical reading of the literature and critical thinking. Students will be required to present papers from the literature and to complete regular homework assignments. During the course, students will develop original research proposals that will use the types of experimental approaches covered in the course to address unanswered questions about Neurogenetics. Students will present these proposals orally and submit them as a final written research project.

Learning objectives for all students:

- Gain an understanding of mechanisms underlying the linkage between genes and behavior, including similarities and differences amongst different animal taxa.
- Explore how alterations in aspects of genetics and behavior can result in human neurodevelopmental disorders, and the importance of animal research for elucidating underlying mechanisms.
- Become proficient at reading, discussing, and presenting primary research literature and critically evaluating data;
- Develop the ability to formulate hypotheses about the mechanistic bases for biological phenomena;
- Become proficient at designing experimental strategies to test hypotheses about the mechanistic bases for biological phenomena;
- Learn to give an oral presentation and to discuss primary research literature critically;
- Learn to give a concise and compelling oral presentation that identifies a scientific question, proposes a hypothetical answer to this question, and describes a novel experimental strategy to test this hypothesis;
- Learn to write a concise and compelling research proposal that identifies a scientific question, proposes a hypothetical answer to this question, and describes a novel experimental strategy to test this hypothesis.
Course format: The course will be a combination of lectures, class exercises, discussions, and student presentations. This class is built around the concept of colleagues working together to better understand science and the scientific process. You must attend classes and take part in the discussions – we will discuss and define what this means in our current environment and we will continue to evaluate how we approach it throughout the term with an eye to data as it emerges.

Readings: Assigned readings for each class session are available in the Modules for that lecture. Files in pdf format for all assigned readings are posted on Canvas. In some cases, reviews that provide background or additional information are also posted on Canvas.

The syllabus is “tentative” because papers pertinent to the course will be chosen during the term, therefore we will adapt as we progress through the term. Updates will be made available ASAP in Canvas.

Grading Policy: – all work must be your own original work. Anything less will result in a Fail.

Homework (15%): Instructions
There will be homework assignments that will cover assigned readings and material covered in class. These will be a standard response to the assigned paper - you will upload these to Canvas. These tasks will ask you to read and analyze the paper of interest for that day. Each homework is due before class – you must enter your responses in Canvas before the lecture begins. Late homework will not be accepted. You must do your own work, no exceptions.

Class Participation (15%): Class participation is crucial for the success of this course. This portion of the grade will be made up of assignments (critiques of presentations and feedback on proposals) as well as attendance and in-class participation. Attendance is important and students will be expected to come to class prepared (read the paper, thought about the assigned material) and ready to actively participate in all class activities. As you read the assigned articles, please keep in mind that some of the topics we will cover may be controversial and one should never take data in a paper simply at face value. Therefore, you should think critically about what you are reading, continually question how the authors of an article arrived at their conclusions, what assumptions they made, whether the data seem credible, and what future experiments could support or refute the conclusions. This type of critical thinking will be necessary for your original research proposal.

Group presentation (25%) - Instructions and Rubric
Each student will work in a small group (typically 2-5 students, dependent on class size) to lead a discussion of a paper for a selected week. The presentation will occur over the course of two days and each student is expected to be extensively involved each of the days. See instructions for details.
Research proposal (45% total)

Proposal assignments, presentation, and written proposal: Each student will be required to write and to present an original research proposal that uses approaches similar to those covered in the course to address an unanswered question in the field of neurogenetics. Students will develop their proposals throughout the course, as indicated on the class schedule.

The components of this proposal development process will contribute to the final course grade as follows:

- (1) Topic area and reading list; (2) Title and Significance, (3) Specific Aims; (4) Outlined experimental design & expected outcomes; (5) Draft Proposal: 15% - Instructions
- Oral presentation: 15% - Guide and Rubric
- Written research proposal: 15% - Guide and Rubric

Class conduct

Class starts promptly at the time set in the schedule and we will proceed for approximately 1 hour with time interaction and for Q&A. Lab starts promptly at the designated time of your section and we will work on papers throughout. Please arrive on time and do not pack up before the conclusion of class. Arriving late and leaving early is disruptive to others around you and to the speaker. Do not talk during lecture in a volume audible to anyone but the intended recipient. Do not use electronic devices for non-class purposes. In particular, silence your devices and be respectful to everyone in the course.

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities. Classroom courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Our classroom is a learning environment, and as such should be a safe, inclusive and respectful place.

Academic Integrity

All students are expected to conform to the student conduct code (http://dos.uoregon.edu/conduct and https://policies.uoregon.edu/.vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code). As detailed in the policy, academic misconduct means the violation of university policy involving academic integrity. This includes cheating (“any act of deception by which a student misrepresents or misleadingly demonstrates that the student has mastered information on an academic exercise that the student has not mastered”), and plagiarism (“using the ideas or writings of another as one’s own.”) The instructor has a zero-tolerance policy for academic dishonesty. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures.
You are encouraged to discuss ideas with each other. However, all work submitted in this course must be your own. Instances of suspected cheating or plagiarism on any material will be referred to the Office of Student Conduct and Community Standards. I take such cases seriously and pursue charges of academic misconduct and their sanctions to the fullest extent allowable, including but not limited to a failing mark for the course.

Inclusiveness
UO is working to create inclusive learning environments. Please notify me if there are aspects of instruction or design of this course that result in barriers to your participation. You may also wish to contact the Accessible Education Center (541-346-1155; usaec@uoregon.edu, Accessible Education CenterLinks to an external site.).

Campus resources to support your learning
Tutoring and Academic Engagement Center (https://engage.uoregon.edu/services/Links to an external site.) Drop-in math and writing support in addition to tutoring, study skills support, and Class Encore. Located in the 4th Floor Knight Library (541) 346-3226, engage@uoregon.edu.

Counseling Center Call anytime to speak with a therapist who can provide support and connect you with resources. Located on the 2nd Floor of the Health Center(541)346-3227

Accessible Education Center The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course. Located on the 1st Floor of Oregon Hall (541) 346-1155, uoaec@uoregon.edu.

Center for Multicultural Academic Excellence (CMAE) mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1st Floor of Oregon Hall (541) 346-3479, cmae@uoregon.edu.

The UO Access Shuttle is an on-campus ride service provided at no cost to students with conditions that limit mobility. More information and a sign-up form can be found on the parking & transportation department website: https://parking.uoregon.edu/content/access-shuttleLinks to an external site..

Discrimination and Harassment
Prohibited Discrimination and Harassment
Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help
at safe.uoregon.edu. To get help by phone, a student can also call either the UO’s 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university. Students experiencing any other form of prohibited discrimination or harassment can find information at respect.uoregon.edu, or aaeo.uoregon.edu, or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at Discrimination & Harassment.

Reporting
The instructor of this class is a Student-Directed Employee. As such, if you disclose to me, I will respond to you with respect and kindness. I will listen to you and will be sensitive to your needs and desires. I will not judge you. I will support you. As part of that support, I will direct students who disclose sexual harassment or sexual violence to resources that can help. I will only report the information shared to the university administration when you as the student requests that the information be reported (unless someone is in imminent risk of serious harm or is a minor). Please note the difference between ‘privacy’ and ‘confidentiality.’ As a Student-Directed Employee I can offer privacy because I am not required to report certain information to the university. However, I cannot be bound by confidentiality as is the case with a counselor or attorney. Confidential resources mean that information shared is protected by federal and state laws. Any information that I as a student-directed employee receive may still be accessed by university or court proceedings. This means, for example, that I could still be called as a witness or required to turn over any related documents or notes that I keep.

Please note also that I am required to report all other forms of prohibited discrimination or harassment to the university administration. Specific details about confidentiality of information and reporting obligations of employees can be found at titleix.uoregon.edu.

Mandatory Reporting of Child Abuse
UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. Child abuse pertains to individuals who are under the age of 18. This statement is to advise you that your disclosure of information about child abuse to the instructor may trigger my duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: Mandatory Reporting of Child Abuse and Neglect.

Safe Ride
541-346-7433 ext 2
pages.uoregon.edu/saferide.
Safe Ride is an assault prevention shuttle that works to provide free, inclusive, and accessible alternatives to traveling alone at night for UO students, faculty, and staff. We are a schedule-ahead service and riders can (1) call once we open to schedule a ride with a dispatcher or (2) leave a voicemail on the day of their ride request. We do not call riders ahead of time to confirm due to capacity constraints, but riders are always welcome to call us to double-check that their ride was scheduled. We are a feminist, ‘for-the-students/by-the-students’ organization and operate out of the Women’s Center in EMU 12F.