

Sensory System and Behavior

ZOO 6927

3 credits

Prerequisites: This course is for graduate students who are familiar with basic principles of molecular biology and cell biology

Instructor: Hua Yan
Office: 511 Carr Hall
Email: hua.yan@ufl.edu

Class Schedule: Wednesday, Period 2 and 3 (8:30 AM-10:25 AM)
Friday, Period 3 (9:35-10:25 AM)

Class Location: Chemical Eng. Building 0316

Textbook: No textbook

Course website: <https://elearning.ufl.edu/>
(Select Log in to E-Learning) Class material, including the syllabus, slides, review and research articles, and other information related to the course, will be posted on the course website on e-Learning.

Office hours via Zoom: By appointment

Email: All email correspondence must be from your @ufl.edu account, have your full name in the body of the email, and contain the course number in the subject line. Emails not meeting these requirements may not be answered quickly.

Course Objectives: This course is for graduate students to learn how molecular and cellular processes regulate sensory neural development and how neurons and neural circuits regulate behavior. Topics include but are not limited to: genetics and epigenetics, neural development and neural plasticity, genetic and neuronal basis of social behavior, and molecular and genetic tools for descriptive and functional analysis in insects and mammals.

The students will learn:

- the general principles of the development and function of visual, olfactory, auditory and somatosensory systems;
- how particular transcription factors, adhesion molecules, signaling pathway components and epigenetic processes play a role in neuronal differentiation, cell fate determination, circuit assembly and neural plasticity;
- the causal links between genes, neurons, neural circuitry and behavior to understand the mechanism by which adaptive behavioral traits evolve;
- the genetic tools that have been developed to label specific neurons and dissect their functions.

The course will include lectures and in-class group activities. Grades will be assigned based on attendance and performance on multiple assessments including: in-class activities (discussion and presentation of review and research articles), summaries and the final mini-review.

Face-to-face Policies

In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: <https://coronavirus.ufhealth.org/vaccinations/vaccine-availability/>. Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.
- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
 - Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
 - Hand sanitizing stations will be located in every classroom.
- If you sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
 - Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.
 - If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- Continue to regularly visit <http://coronavirus.UFHealth.org> and <http://coronavirus.ufl.edu> for up-to-date information about COVID-19 and vaccination.

Attendance and make-ups

Students are expected to attend all classes and are responsible for all material covered during the lecture and in-class activities. Students are recommended to read the assigned articles before coming to class.

Make-up exams will be given with prior permission or documentation of illness.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies.

Accommodations Students who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

In-class group activities Depending on the number of students, we will separate students into multiple groups. Each group will work together to finish review paper discussion and presentation of research papers.

Writing assignments There will be 4 writings during the semester: 3 are summaries for contents that the students have learned in each section, and the 4th is a mini-review. No closed-book exams.
The scores are released within a week after the submission, and are available for discussion for a week after its release.

Summary Each student is required to write a summary at the end of each section: 2 pages or more, single spaced, including references, figures are optional. This is NOT a group assignment. See Lecture Schedule for the timeline.

Final mini-review Each student is required to write a final mini-review on your interested topic: 3 pages or more, single spaced, including figure(s) and references. This is NOT a group assignment. See Lecture Schedule for the timeline.

Grading Course grades will be determined by: 12% attendance + 32% in-class activities (2% for each presentation, 1% for each review discussion) + 14% first summary + 14% second summary + 14% third summary + 14% final mini-review = 100% course grade.

See the table for conversion from point range to letter grade.

| Point Range (%) | Letter Grade |
|-----------------|--------------|
| ≥ 93.0 | A |
| ≥ 90.0 | A- |
| ≥ 87.0 | B+ |
| ≥ 83.0 | B |
| ≥ 80.0 | B- |
| ≥ 77.0 | C+ |
| ≥ 73.0 | C |
| ≥ 70.0 | C- |
| ≥ 67.0 | D+ |
| ≥ 63.0 | D |
| ≥ 60.0 | D- |
| < 60.0 | E |

Evaluation Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Resources Available to Students

Health and Wellness

- *U Matter, We Care*: umatter@ufl.edu; 392-1575
- *Counseling and Wellness Center*: <http://www.counseling.ufl.edu/cwc/Default.aspx>; 392-1575
- *Sexual Assault Recovery Services (SARS)*: Student Health Care Center; 392-1161
- *University Police Department*: <http://www.police.ufl.edu/>; 392-1111 (911 for emergencies)

Academic Resources

- *E-learning technical support*: Learningsupport@ufl.edu; <https://lss.at.ufl.edu/help.shtml>; 352-392-4357 (opt. 2)
- *Career Resource Center*: Reitz Union; <http://www.crc.ufl.edu/>; 392-1601
- *Library Support*: <http://cms.uflib.ufl.edu/ask>
- *Teaching Center*: Broward Hall; 392-2010 or 392-6420
- *Writing Studio*: 302 Tigert Hall; <http://writing.ufl.edu/writing-studio/>; 846-1138
- *Student Complaints On-Campus*: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>
- *On-Line Students Complaints*: <http://distance.ufl.edu/student-complaint-process/>

Procedure for Conflict Resolution Any classroom issues, disagreements or grade disputes should be discussed first between the instructor and the student. If the problem cannot be resolved, please contact the Undergraduate or Graduate Coordinator or the Department Chair. Be prepared to provide documentation of the problem, as well as all graded materials for the semester. Issues that cannot be resolved departmentally will be referred to the University Ombuds Office (<http://www.ombuds.ufl.edu>; 392-1308) or the Dean of Students Office (<http://www.dso.ufl.edu>; 392-1261). For further information refer to https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf (for residential classes) or <http://www.distance.ufl.edu/student-complaintprocess> (for online classes).

Conduct in Class

Please be courteous and **do not talk during lecture** (except during class discussions or activities), as this can be distracting to the professor and the other students. Also, cell phones should be silenced during lecture.

Academic Honesty

UF students are bound by The Honor Pledge which states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code."

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Lecture Schedule

Lecture topics for this course are listed below. This is a flexible, tentative schedule; the dates and amount of coverage of specific topics may vary somewhat from the list below.

| Date | | Topic |
|-----------------------------------|----|--|
| Overview and Concepts | | |
| Wed 8/25 | 1 | Introduction to the course |
| | 2 | Genetics and epigenetics 1 |
| Fri 8/27 | 3 | Genetics and epigenetics 2 |
| Wed 9/1 | 4 | Neurons and neural circuits 1 |
| | 5 | Neurons and neural circuits 2 |
| Fri 9/3 | 6 | Review paper discussion |
| Wed 9/8 | 7 | Genetic dissection of neural circuits 1 |
| | 8 | Genetic dissection of neural circuits 2 |
| Fri 9/10 | 9 | Review paper discussion |
| Wed 9/15 | 10 | Neural development 1 |
| | 11 | Neural development 2 |
| Fri 9/17 | 12 | Review paper discussion |
| Mon 9/20 | | Deadline for the 1st summary |
| Sensory neural development | | |
| Wed 9/22 | 13 | Visual system |
| | 14 | Review paper discussion |
| Fri 9/24 | 15 | Student presentation |
| Wed 9/29 | 16 | Chemosensory system 1 |
| | 17 | Review paper discussion |
| Fri 10/1 | 18 | Student presentation |
| Wed 10/6 | 19 | Chemosensory system 2 |
| | 20 | Review paper discussion |
| Fri 10/8 | 21 | Student presentation |
| Wed 10/13 | 22 | Auditory system |
| | 23 | Review paper discussion |
| Fri 10/15 | 24 | Student presentation |
| Wed 10/20 | 25 | Somatosensory system |
| | 26 | Review paper discussion |
| Fri 10/22 | 27 | Student presentation |
| Mon 10/25 | | Deadline for the 2nd summary |

| | | Neural basis of behavior |
|-----------|----|--|
| Wed 10/27 | 28 | Neural circuits and behavior 1 |
| | 29 | Review paper discussion |
| Fri 10/29 | 30 | Student presentation |
| Wed 11/3 | 31 | Neural circuits and behavior 2 |
| | 32 | Review paper discussion |
| Fri 11/5 | 33 | Student presentation |
| Wed 11/10 | 35 | Neuroplasticity |
| | 35 | Review paper discussion |
| Fri 11/12 | 36 | Student presentation |
| Wed 11/17 | 37 | Social behavior 1 |
| | 38 | Review paper discussion |
| Fri 11/19 | 39 | Student presentation |
| Wed 11/24 | | Holiday — no classes |
| | | |
| Fri 11/26 | | |
| Wed 12/1 | 40 | Social behavior 2 |
| | 41 | Review paper discussion |
| Fri 12/3 | 42 | Student presentation |
| Mon 12/6 | | Deadline for the 3rd summary |
| Wed 12/8 | 43 | Summary of the course and Q&A on the mini-review |
| | 44 | |
| Fri 12/10 | | Deadline for the mini-review |