

UNIVERSITY OF FLORIDA
COLLEGE OF MEDICINE SYLLABUS
NEUROSCIENCE
GMS 7795 Special Topics: Behavioral Neuroscience
(2 credit)
Fall 2024
Delivery Format: In person. Time: Thursdays 9:30-11:30 am
Room: L1-101

Instructors:

Dr. Freddyson Martinez-Rivera

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Preferred Course Communications: email

Prerequisites: Doctoral students

Course Description:

Teaches basic principles and methodology in behavioral neuroscience to graduate students. Students will learn about an array of systems and topics that have been studied by various investigators with a focus on how the nervous system controls particular behaviors. The class will involve introductory lectures, research articles, discussion-based learning exercises and student presentations.

Purpose and Outcome:

The purpose of this course is to prepare students to use behavioral approaches with direct relevance to neuroscience research. This is one of the required courses for the Neuroscience PhD program. It is intended for all PhD students interested in learning about the neural control of behavior.

Course Overview:

The goal of behavioral neuroscience is to understand how networks in the central nervous system orchestrate behavior and give rise to perception. To link neural mechanisms to specific functions, the students will formulate research questions and experimental strategies to test their hypotheses.

This course will cover the major neural networks and the neural mechanisms controlling specific behaviors, ranging from sensory processing, motor control, reward signaling to hormonal control, and higher order functions such as learning and memory and social behaviors. Throughout the course, students will learn about the fundamentals of behavioral neuroscience in which they will acquire the basic concepts and commonly used techniques in the field. The lectures will be complemented by meaningful article discussions focused on novel and cutting-edge technologies/paradigms. Along with this, the students will have the opportunity to interact with some invited experts on specific topics. At the end of the course students will develop an NIH style Research Strategy term paper, where they can utilize the principles learned in class to come up with the rationale and experimental design for two experimental aims. These proposals will be presented during the last two days of the course.

Relation to Program Outcomes:

This course fulfills the requirements for Academic Credits for graduate students in the Neuroscience program.

Course Objectives and/or Goals:

By the end of each semester, students will be able to:

- Understand the basic principles of behavioral neuroscience.
- Understand the basic principles of sensory stimuli and methods to test sensory circuitry.
- Describe how motor actions are generated.
- Understand how sensory and motor integration contributes to the neural control of behavior.
- Understand the neurobehavioral basics of learning & memory, reward, decision making, social interactions and other processes relevant to prevalent neurological and psychiatry disorders.
- Understand the rationale behind different behavioral methods and explain how complex behaviors are studied.
- Conduct literature review and critically evaluate research articles covering a variety of topics in behavioral neuroscience.
- Be able to design behavioral experiments to interrogate central networks.
- Improvement in critical thinking, group discussion, and reading & writing skills.

Instructional Methods:

Class format will be a mixture of lectures and group discussions on specific assignments. The last two days of class will consist of student presentations. Throughout the course, we encourage an interactive, active learning approach with discussions about the topics presented. Lecture PowerPoint slides will be posted on Canvas to help facilitate preparation for each lecture.

Description of Course Content:

Topical Outline/Course Schedule

Week	Date	Topic	Lecturer	Reading
1	08/22	Introduction to Neuroethology	Martinez-	Chapters (Chpts)

			Rivera, Varga	1-4
2	08/29	Sensation and perception	Wesson	Chpts; 9-11
3	09/05	Paper discussion 1	Varga, Martinez-Rivera	To be assigned (TBA)
4	09/12	Brain control of movement, central patterns generators, navigation	Varga	Chpts; 9-11
5	09/19	Paper discussion 2	Varga, Martinez-Rivera	TBA
6	09/26	Hormonal control of behaviors 1. Courtship, reproductive and parental behaviors	Varga	Chpts; 7 and other reading TBA
7	10/03	Hormonal control of behaviors 2. Feeding, energy balance	Martinez-Rivera	Chpts; 6
8	10/10 *FMR out.	SfN – no class		
9	10/17	Paper discussion 3	Martinez- Rivera, Varga	TBA
10	10/24	Reward systems, motivated behaviors and decision making	Martinez-Rivera	Chpt; 5
11	10/31	Learning and memory	Martinez-Rivera	Chpt; 12
12	11/7	Emotions and cognition, social behaviors	Padilla-Coreano	Chpt; 8&13
13	11/14	Paper discussion 4 ** Term paper due	Varga; Martinez- Rivera, Padilla- Coreano	TBA
14	11/21	Sleep and circadian rhythms	Varga	Chpt; 15
15	12/05	Final presentations	students	
16	12/12	Final presentations	students	

Course Materials and Technology:

Book: Brain & Behavior: An Introduction to Behavioral Neuroscience, 6th edition, Garrett and Hough

Additional reading resources will be provided:

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- [UF eLearning](#)

Academic Requirements and Grading:

Recommended Courses (1st year classes Neuroscience program) including: Fundamentals of Neuroscience (GMS 6007), Neuroanatomy (GMS 6701/7795), Principles of Neurophysiology (GMS6022)

Assignments:

Term paper: 5 page Research Strategy (Significance, Background and Approach with two Specific aims). Choose one behavior relevant to your thesis, discuss the significance of that behavior, and propose two experiments to investigate the integrated neural circuitry/ brain region that is responsible for controlling that specific behavior.

Final presentations: It will consist of an individual presentation on an assigned paper. Both students and professors will participate in the paper's selection.

Grading:

Requirement	Percent Final Grade
Participation	50%
Term paper	25%
Final presentation	25%

Point system used (i.e., how do course points translate into letter grades).

Percentage Earned	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
Below 60	E

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Exam Policy: No exams

Policy Related to Required Class Attendance:

Requirements for class attendance and assignments, and other work in this course are

consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>). Additional information can be found here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Academic Integrity:

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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.”

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process:

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at

<https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their

Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Policy Related to Guests Attending Class:

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers.

Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the [Classroom Guests of Students policy](#) in its entirety.

Support Services:

Accommodations for Students with Disabilities:

Students with disabilities 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. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health:

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.

- The Student Health Care Center at UF Health is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at UF Health offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- UF Health Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32698, ufhealth.org/emergency-room-trauma-center.
- University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).
- Crisis intervention is always available 24/7 from:

Alachua County Crisis Center:

(352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: cms.uflib.ufl.edu/ ask various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall 352-392-2010 or to make an appointment 352 392-6420. General study skills and tutoring. teachingcenter.ufl.edu/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process