

**PSB 4934 Developmental Neuroscience
Spring 2025**

Section #D25R5; Class #25216

class time: Monday, Wednesday, and Friday period 3, 9:35 – 10:25 a.m.

room: Computer Science/Engineering (CSE) room E221

3 credits

In this course, we will examine the intricate choreography that underlies the development of vertebrate nervous systems. We will explore the origins of the central and peripheral nervous systems in the developing embryo and fetus. We will examine the complex interactions between gene expression and biochemical signaling in the induction, migration, and patterning of neurons and glial cells in the brain and body. We will examine epigenetic factors in differentiation of progenitors into mature neural cell types, and the role of apoptosis in development and neurodegeneration. We will also explore synaptic formation in the central and peripheral nervous systems, and the impact of environmental experience in strengthening and pruning of connections. All of this will be coordinated with analyses of the ways in which nervous system development is reflected in childhood behavior. If time permits, we may also examine the causes and consequences of neurodevelopmental errors.

Professor: Darragh P. Devine, Ph.D.

dpdevine@ufl.edu

phone: 352-273-2174

office hours: Wednesday 12:50 - 1:40 p.m. and Friday 10:40 - 11:30 a.m. (or by appointment)

Wednesday office hours are online at: Meeting ID: 933 7954 4530, Passcode: PSB4934

Friday office hours are in-person in the Psychology Building, room PSY 337

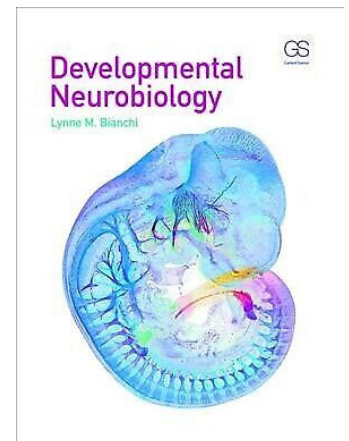
Required Text: *Developmental Neurobiology*, 1st ed. (2024), by Lynne M. Bianchi (ISBN # 978-0815344827)

COURSE COMMUNICATIONS: If students have questions about the website, general course content, or other online materials, they should consult the syllabus and the supporting materials in the START HERE module on the Canvas website.

Dr. Devine will be available to answer questions during office hours, or through e-mail. Any e-mailed questions will be answered within approximately 24-48 hours (questions on the weekend may wait until the beginning of the following week).

PREREQUISITE KNOWLEDGE and SKILLS: Students are required to successfully complete Behavioral Neuroscience (PSB3340 or equivalent prior to registering for this course. Fundamental knowledge in Introductory Psychology (e.g. PSY2012) is helpful, but not required. The course is self-contained - meaning that everything you need is contained within the course materials. Accordingly, this course is appropriate for students who have a broad interest in Developmental Psychology and the biological basis of behaviour.

ATTENDANCE POLICY: Students are expected to attend all classes, and frankly, absence from classes will cause a student to miss information that will be tested on the exams. Requirements for class attendance and make-up exams, and other work in the course are consistent with university policies. [See UF Academic Regulations and Policies for more information regarding the University Attendance Policies.](#)



COURSE OBJECTIVES: The purpose of this course is to provide a broad foundation in Developmental Neuroscience. Lectures and reading material will emphasize the cellular and molecular biology, anatomy, physiology, and development of the nervous system. The relationship between the biology and behavior of the developing organism will be emphasized. The course is formulated primarily for senior undergraduate students in the Behavioral and Cognitive Neuroscience Program, and for students who identify as pre-Health or other biological or biomedical sciences.

The textbook provides adequate coverage of all these topics and some additional topics. Additional assigned readings will provide updated and more nuanced information about the topics we will cover. Those readings will be posted on the course website [note, the reading load will be demanding during some portions of the course, and I strongly suggest that you read ahead of class meetings - so plan accordingly].

EXAMINATIONS and GRADING: This course will have three take-home exams and one optional final exam. Each take-home exam will consist of a combination of multiple choice and short essay questions. Each of the first three take-home exams will cover only the text and lecture material from the chapters that have most recently been discussed in class (i.e. exam 1 will cover material from the beginning of the course up to the time of the exam; exam 2 will cover material assigned after exam 1; and exam 3 will cover material assigned after exam 2). The final exam will be comprehensive (i.e. all the chapters that are covered during the semester). Students will receive a grade based upon the exams.

Each of the take-home exams will count 33⅓% toward your final grade. If you perform adequately on all take-home exams and are satisfied with your grade, you may skip the final exam. If you fail to turn in a take-home exam, or if you do poorly on an exam, you can drop that exam/grade and take the final exam to replace it. In this case your three *best* exam scores will each count 33⅓% of your total grade.

A penalty of 10% per day will be imposed for any examination that is turned in late.

The grading scheme is as follows:

Score (%)	Grade	Grade Points	Score (%)	Grade	Grade Points
93-100	A	4.00	73-76	C	2.00
90-92	A-	3.67	70-72	C-	1.67
87-89	B+	3.33	67-69	D+	1.33
83-86	B	3.00	63-66	D	1.00
80-82	B-	2.67	60-62	D-	0.67
77-79	C+	2.33	<60	E	0.00

A minimum grade of C is required for General Education (Biological Science) credit.

Additional information on current UF policies for assigning grade points can be found at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/> .

COURSE SCHEDULE:

For critical semester dates see <http://www.registrar.ufl.edu>

This schedule is ambitious. It will likely be modified during the semester.

Approx. Dates

Chapter and Topic

January 13-17 Chapter 1: An Introduction to the Field of Developmental Neurobiology

January 20 Martin Luther King Jr. Day – no class

January 22-24 Chapter 2: Neural Induction

January 27-31 Chapter 3: Segmentation of the Anterior-Posterior Axis

February 3-7 Chapter 4: Patterning Along the Dorsal-Ventral Axis

February 10-14 Chapter 5: Proliferation and Migration of Neurons

Take-home exam #1: Ch. 1-5, and all material from lectures (available Feb 14, due Feb 21 11:59 p.m.)

February 17-21 Chapter 6: Cell Determination and Early Differentiation

February 24-26 Chapter 7: Neurite Outgrowth, Axonal Path-Finding, and Initial Target Selection

Feb 28-March 3 Chapter 8: Neuronal Survival and Programmed Cell Death

March 5-7 Chapter 9: Synaptic Formation and Reorganization Part I: The Neuromuscular Junction

March 10-14 Chapter 10: Synaptic Formation and Reorganization Part II: The Synapses in the Central Nervous System

Take-home exam #2: Ch. 6-10, and all material from lectures (available March 14, due March 28 11:59 p.m.)

March 17-21 Spring Break – no class

March 24-26 Development of the Visual System

March 28-31 Development of Motor Systems

April 2-4 Development of Cognition and Language

April 7-9 Development of Executive Function

April 11-14 Development of Social Behavior

April 16-18 Hormones and Development

April 21-23 Overview of Neurodevelopmental Disorders

Take-home exam #3: All material covered after Spring Break (avail April 23, due April 28 11:59 p.m.)

Comprehensive Final Exam - all chapters, all readings, and all lectures (avail April 28, due May 2 11:59 p.m.)

COURSE EVALUATIONS: Students are expected to provide professional and respectful feedback on the quality of 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.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, or in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results [are available to students here](#).

GETTING HELP: For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

** Any requests for special consideration due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail Dr. Devine within 24 hours of the technical difficulty if you wish to request any special considerations.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

ADDITIONAL SUPPORT 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. [Click here to get started with the Disability Resource Center](#). It is important for students to share their accommodation letter and discuss their access needs, as early as possible in the semester.

CURRENT UF GRADING POLICIES FOR ASSIGNING GRADE POINTS can be found at this [link to the university grades and grading policies](#).

IN-CLASS RECORDING: Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal education use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by an instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentation such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Campus Resources: Health and Wellness

U Matter, We Care: If you or someone you know is in distress,

please contact <mailto:umatter@ufl.edu>, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the [Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).

University Police Department: Visit [UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands 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 32608; Visit the [UF Health Emergency Room and Trauma Center website](#).

GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell website](#) or call 352-273-4450.

Campus Resources: Academic Resources

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at <mailto:helpdesk@ufl.edu>.

[Career Connections Center](#): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

[Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources. Call 866-281-6309 or email ask@ufl.libanswers.com for more information.

[Teaching Center](#): 1317 Turlington Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

[Writing Studio](#): Daytime (9:30am-3:30pm): 2215 Turlington Hall, 352-846-1138 | Evening (5:00pm-7:00pm): 1545 W University Avenue (Library West, Rm. 339). Help brainstorming, formatting, and writing papers.

Academic Complaints: Office of the Ombuds; Visit the [Complaint Portal webpage](#) for more information.

Enrollment Management Complaints (Registrar, Financial Aid, Admissions): View the Student Complaint Procedure webpage for more information.

ACADEMIC HONESTY GUIDELINES: The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XI of the Student Conduct Code. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines ([University of Florida Rule 6C1-4.017](#)).

Cheating. The improper taking or tendering of any information or material which shall be used to determine academic credit. Taking of information includes, but is not limited to, copying graded homework assignments from another student; working together with another individual(s) on a take-home test or homework when not specifically permitted by the teacher; looking or attempting to look at another student's paper during an examination; looking or attempting to look at text or notes during an examination when not permitted. The tendering of information includes, but is not limited to, giving of your work to another student to be used or copied; giving someone answers to exam questions either when the exam is being given or after taking an exam; giving or selling a term paper or other written materials to another student; sharing information on a graded assignment.

Plagiarism. The attempt to represent the work of another as the product of one's own thought, whether the work is published or unpublished, or simply the work of a fellow student. Plagiarism includes, but is not limited to, quoting oral or written materials without citation on an exam, term paper, homework, or other written materials or oral presentations for an academic requirement; submitting a paper which was purchased from a term paper service as your own work; submitting anyone else's paper as your own work.

Misrepresentation. Any act or omission with intent to deceive a teacher for academic advantage. Misrepresentation includes using computer programs generated by another and handing it in as your own work unless expressly allowed by the teacher; lying to a teacher to increase your grade; lying or misrepresenting facts when confronted with an allegation of academic dishonesty.

Fabrication. The use of invented or fabricated information or the falsification of research or other findings with the intent to deceive for academic or professional advantage.

UF's Academic Honesty Policy is clearly stated in rule [6CI-4.017 Student Affairs: Academic Honesty Guidelines](#).

Honor 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 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."

In response to COVID-19, the following recommendations 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 and have been demonstrated to be safe and effective against the COVID-19 virus. Visit [One.UF](#) for screening / testing and vaccination opportunities.
- If you are sick, stay home. 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 to be evaluated.
- Course materials will be provided to you with an excused absence (documentation required), and you will be given a reasonable amount of time to make up work.