

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

Instructor: Dr. Jennifer Brielmaier
Class time: Online
Class location: Online
Campus office location: Fairfax, DK 2044
Grading TA: Farah Bader

E-mail address: jbrielma@gmu.edu
Office phone #: 703-993-1469
Virtual office hours: Wed. 8:30-9:30 pm
TA Email: fbader2@masonlive.gmu.edu

Course description:

Developmental neuroscience refers to the study of the cellular and molecular events underlying the emergence of the nervous system during embryonic development and beyond. Topics include patterning of the nervous system, cell differentiation, axon guidance, synapse formation, and neural death. Systems neuroscience involves the study of neural circuits, organized into sensory and motor systems, whose activity gives rise to complex functions. For each of these systems, pathways of information flow, information processed at each level, overall function, and consequences of injury/damage will be discussed. Students are also expected to become familiar with the scientific methods used to tackle questions in developmental/systems neuroscience as well as current questions and/or controversies in the field.

This course will consist of a series of lectures, quizzes, problem sets, and exams to be completed online. The course is asynchronous, meaning that there are no required virtual or in-person meeting times. However, there are weekly deadlines and exams will occur on specific dates. All course tasks are described in detail below.

Required textbook:

Purves, D., et al. (2017) *Neuroscience, 6th Edition*. Sinauer Associates. ISBN: 9781605353807

Optional recommended materials:

- Diamond, M.C., Scheibel, A.B., & Elson, LM. *The Human Brain Coloring Book*. Coloring Concepts, Inc. ISBN: 978-0064603065

Learning goals:

- Describe molecules and signaling pathways responsible for various neurodevelopmental processes
- Understand the basic organization of the nervous system pathways for perception and transmission of sensory and motor information, and similarities and differences between the different systems.
- Outline the specific pathways through which sensory information is transmitted from peripheral receptors to brain regions responsible for higher-order processing and integration.
- Outline the specific pathways within the brain and spinal cord responsible for control of simple and complex motor behaviors.
- Gain an appreciation for the clinical applicability of developmental and systems neuroscience research.

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

Course tasks:

- **Chapter Quizzes:** Following completion of all other tasks for a chapter, you will take an online chapter quiz via Blackboard. All quiz questions are multiple-choice and cover topics that will appear on exams. Quizzes are open book/note and timed, and you may only take each quiz once. **Quizzes must be completed BY (not at) 11:59 pm on their specific due dates** (see course schedule below). There will be a total of 12 chapter quizzes, and your lowest two quiz grades will be dropped. Thus 10 quizzes will count toward your final grade for a total of 20% of your final grade.
- **Problem Sets:** A total of three problem sets, due prior to each exam, will be given throughout the semester. The questions are designed to go beyond simple recall of facts and encourage you to integrate your knowledge and/or apply what you have learned to solve novel problems. Exam questions may be inspired by questions from the problem sets. Collaboration is permitted but you must submit your answers individually, document the name(s) of your collaborator(s), and *write your own answers in your own words*. Problem sets will be submitted via Blackboard and graded according to the accuracy and completeness of your answers. Answer keys will become available upon completion. Problem sets not turned in by the deadline will incur a late penalty of 10% per day. **Students are responsible for ensuring that they have uploaded the correct document and that it is in a readable format. If you have submitted a file on time and subsequently discover a problem with it, please email me a correct/readable version of the file before the deadline** and describe the problem you encountered. I reserve the right to apply a late penalty if the above instructions are not followed. The three problem sets will together account for 20% of your final grade.
- **Exams:** There will be a total of three exams consisting of multiple choice, fill in the blank, and short answer questions. Exams are not open book/note and will be timed. Each student will be videotaped during exams using the Respondus LockDown Browser Monitor; thus, a webcam is required for exams. Each exam accounts for 20% of your final grade (60% total). There is an optional cumulative final exam which may be taken to replace the lowest of your 3 exam scores.

Grading:

Breakdown: Chapter Quizzes (20%) + Problem Sets (20%) + Exams (60%) = 100%

Grades will be assigned based on the following scale:

A+ 97% or above	B+ 87-89%	C+ 77-79%	D 60-69%
A 93-96%	B 83-86%	C 73-76%	F 59% & below
A- 90-92%	B- 80-82%	C- 70-72%	

Incomplete (IN) grades will be assigned only in cases of compelling and documented need, in accordance with policies set forth in the University Catalog.

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

Tentative Schedule:

NOTE: You are responsible for knowing about all announcements and any syllabus or schedule modifications made via Blackboard and/or email.

WEEKS	CONTENT	ASSIGNMENTS DUE
UNIT 1 DEVELOPMENT		
Week 1 Tue 08/27- Mon 09/02	Course Orientation and Introductory Activities	Mon 09/02 by 11:59 pm: Introduce yourself on the Padlet wall Syllabus and Schedule Quiz
Week 2 Tue 09/03- Mon 09/09 09/03 Last Day to Add	Chapter 22: Early Brain Development	Mon 09/09 by 11:59 pm: Ch. 22 Quiz
Week 3 Tue 09/10- Mon 09/16	Chapter 23: Construction of Neural Circuits	Mon 09/16 by 11:59 pm: Ch. 23 Quiz
Week 4 Tue 09/17- Mon 09/23 09/17 Last Day to Drop	Chapter 24: Experience- Dependent Plasticity	Mon 09/23 by 11:59 pm: Ch. 24 Quiz
Week 5 Tue 09/24- Mon 09/30	Problem Set 1 Exam 1 Prep and Exam (Chapters 22, 23, 24)	Mon 09/30 by 11:59 pm: Problem Set 1 Exam 1 (opens at 12 am Thu 09/26)
UNIT 2 SENSORY SYSTEMS		
Week 6 Tue 10/01- Mon 10/07	Chapter 12: Central Visual Pathways	Mon 10/07 by 11:59 pm: Ch. 12 Quiz
Week 7 Tue 10/08- Mon 10/14	Chapter 13: The Auditory System	Mon 10/14 by 11:59 pm: Ch. 13 Quiz
Week 8 Tue 10/15- Mon 10/21	Chapter 15: The Chemical Senses	Mon 10/21 by 11:59 pm: Ch. 15 Quiz
Week 9 Tue 10/22- Mon 10/28	Chapter 9: The Somatosensory System	Mon 10/28 by 11:59 pm: Ch. 9 Quiz
Week 10	Problem Set 2	Mon 11/04 by 11:59 pm:

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

WEEKS	CONTENT	ASSIGNMENTS DUE
Tue 10/29- Mon 11/04	Exam 2 Prep and Exam (Chapters 9, 12, 13, 15)	Problem Set 2 Exam 2 (opens at 12 am Thu 10/31)
UNIT 3 MOTOR SYSTEMS		
Week 11 Tue 11/05- Mon 11/11	Chapter 16: Lower Motor Neurons	Mon 11/11 by 11:59 pm: Ch. 16 Quiz
Week 12 Tue 11/12- Mon 11/18	Chapter 17: Upper Motor Neurons	Mon 11/18 by 11:59 pm: Ch. 17 Quiz
Week 13 Tue 11/19- Mon 11/25	Chapter 18: Basal Ganglia	Mon 11/25 by 11:59 pm: Ch. 18 Quiz
Week 14 Tue 11/26- Mon 12/02	Chapter 19: Cerebellum	Mon 12/02 by 11:59 pm: Ch. 19 Quiz
Week 15 Tue 12/03- Mon 12/09	Problem Set 3 Exam 3 Prep and Exam (Chapters 16, 17, 18, 19)	Mon 12/09 by 11:59 pm: Problem Set 3 Exam 3 (opens at 12 am Thu 12/05)
Week 16 Tue 12/10- Mon 12/16 Reading Days 12/09-12/10; Exam Period 12/11-12/18	OPTIONAL Final Exam Prep and Exam (All Chapters)	Mon 12/16 by 11:59 pm: OPTIONAL Final Exam (opens at 12 am Thu 12/12)

Add/drop deadlines:

Last day to add/drop with 100% tuition refund Sept 9

Last day to drop with partial tuition refund Sept 17

Last day to drop with no tuition refund Sept 30

Makeup policies:

- **Missed quizzes:** Any chapter quiz not taken by its deadline will receive a grade of zero. Because the lowest two grades will be dropped, chapter quizzes cannot be made up under any circumstances.
- **Missed problem sets:** Problem sets turned in late will receive a late penalty of 10% per day as described above.

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

- **Missed exams:** Late exams will only be permitted with medical or similar documentation. If you fail to take Exams 1, 2 or 3 by the deadline, and do not have documentation, you will need to plan on taking the final exam in order to make up for the missing grade.

Extensions on exams, quizzes, and/or problem sets will only be given for students with academic accommodations through the Office of Disability Services. Without such accommodations, permission to postpone work will only be given for very acute and important reasons, with documentation and at my discretion. A 10% per day late penalty may be applied in these situations.

Students are responsible for checking the GMU Academic Calendar and making sure they are available to complete coursework throughout the entire semester. For an online course this means ensuring you have reliable Internet access from beginning to end. **Exams and other work may not be postponed due to travel occurring during the semester**, whether planned or not; nor can the final exam be taken earlier than the scheduled timeframe.

Official communications via GMU email:

Mason uses electronic mail to provide official information to students. Examples include communications from course instructors, notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason email account, and are required to activate that account and check it regularly.

Technology statement:

Required knowledge of technology for this course includes ability to access course materials posted on Blackboard and/or sent via email to your GMU address. To log in to Blackboard, go to the MyMason portal at <https://mymason.gmu.edu>, enter your PatriotPass credentials (i.e., your Mason email username and password), and select the Courses tab. **Please be sure that you have continuous access to Blackboard and that your GMU email account is active.**

The technology requirements for this online course are as follows:

Hardware:

- A Windows or Macintosh computer with at least 2 GB of RAM and to a fast, reliable broadband Internet connection (e.g., cable, DSL).
- Recommended computer monitor and laptop screen size of 13 inches or larger, for optimum visibility of course material.
- Computer speakers or headphones to listen to recorded content.
- A headset microphone for live audio sessions using course tools like Blackboard Collaborate.

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

- A webcam (built in to your computer or a portable one that can be externally mounted) for taking exams using Respondus Monitor.
- Enough space on your computer to 1) install the required and recommended software and 2) save your course assignments.

Software:

- Web browser (See [Blackboard Support](#) for supported web browsers)
- Blackboard Courses (Log into <http://mymason.gmu.edu>, select the Courses Tab)
- Blackboard Collaborate (select from the course menu)
- Adobe Acrobat Reader ([free download](#))
- Flash Player ([free download](#))
- Microsoft Office ([purchase](#))
- Respondus LockDown Browser (download from the myMason home page or with [this link](#))

For hardware and software purchases, visit [Patriot Computers](#).

Copyright statement:

In accordance with university policy, I hold the copyright on all course materials prepared by me (lecture slides/videos, problem set questions, quiz and exam questions, chapter study questions). Reproducing or sharing these materials outside of our course (e.g. on study websites such as Course Hero, Quizlet, or Study Blue) is a copyright violation and will be reported to the Copyright Office. Students who violate the University Copyright Policy may place themselves individually at risk for liability in the event of a claim of copyright infringement.

Disability accommodations:

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu | Phone: (703) 993-2474

Academic integrity:

George Mason University has an Honor Code, which requires all members of this community to maintain the highest standards of academic honesty and integrity. Cheating, plagiarism, lying, and stealing are all prohibited. All violations of the Honor Code will be reported to the Honor Committee. See honorcode.gmu.edu for detailed information. You in this course are expected to behave at all times in a manner consistent with [the GMU Honor Code](#). Violations of the Honor Code will not be tolerated

Molecular, Developmental and Systems Neuroscience
NEUR 335-DL1
Fall 2019

in this course and will be reported according to GMU procedures. **You must paraphrase any information from a source into your own words. Do not copy anything word for word, even if you are citing the source. Direct quotes are not accepted in problem sets.** The instructor reserves the right to use software to determine the extent to which the work is the student's.

If you have questions about when the contributions of others to your work must be acknowledged and appropriate ways to cite those contributions, please talk with the professor or utilize the GMU writing center. Here is a great online quiz that you can take to check your knowledge about what is and is not plagiarism:

<http://www.easybib.com/guides/quiz-is-it-plagiarism/>.

Religious holidays:

Please refer to George Mason University's calendar of religious holidays and observations (<http://ulife.gmu.edu/calendar/religious-holiday-calendar/>). It is the student's responsibility to speak to the instructor in advance should their religious observances impact their participation in class activities and assignments.

Student privacy:

George Mason University strives to fully comply with FERPA by protecting the privacy of student records and judiciously evaluating requests for release of information from those records. Please see George Mason University's student privacy policy

<https://registrar.gmu.edu/students/privacy/>

Student services:

- **University Libraries:** University Libraries provides resources for distance students. (See <http://library.gmu.edu/distance> and http://infoguides.gmu.edu/distance_students).
- **Writing Center:** The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing. (See <http://writingcenter.gmu.edu>). You can now sign up for an Online Writing Lab (OWL) session just like you sign up for a face-to-face session in the Writing Center, which means YOU set the date and time of the appointment! Learn more about the [Online Writing Lab \(OWL\)](#).
- **Counseling and Psychological Services:** The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance (See <http://caps.gmu.edu>).