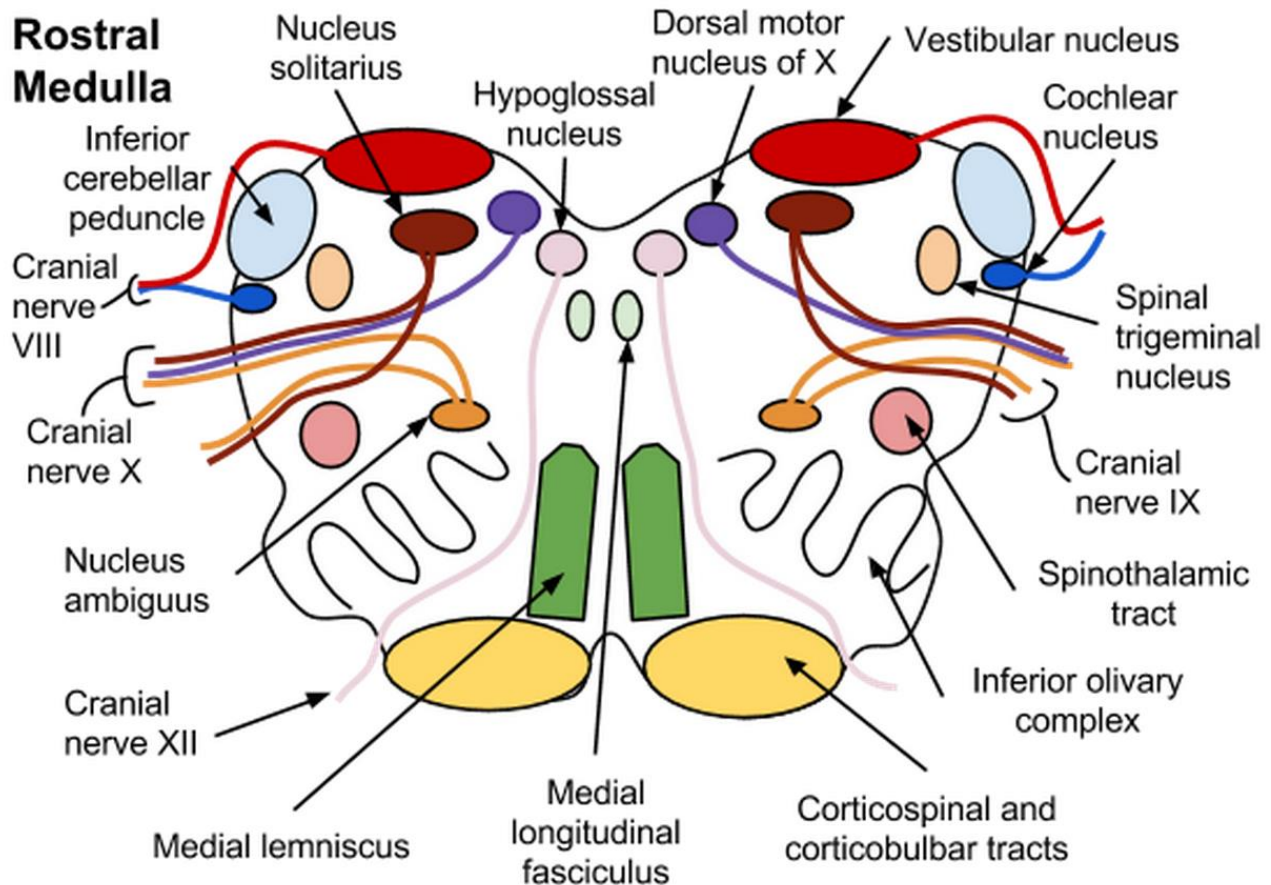


Mammalian Neuroanatomy (NEUR 603)



<https://imgur.com/a/A0Kib>

Figure of the highly complex nuclei and pathways in the rostral medulla. Many students find structures such as the brainstem difficult to understand, however with a mind to the developmental trajectory and the structure-function relationships, such structures can be understood and found to be beautiful in their complexity.

George Mason University

Fall 2023

Wednesdays 1:30-4:10 pm Krasnow 259, Fairfax Campus. Face-to-face instruction.

Instructor: Greta Ann Herin, Ph.D. Term Associate Professor, Interdisciplinary Program in Neuroscience. Office: Krasnow 255 Office phone (703) 993-9720.

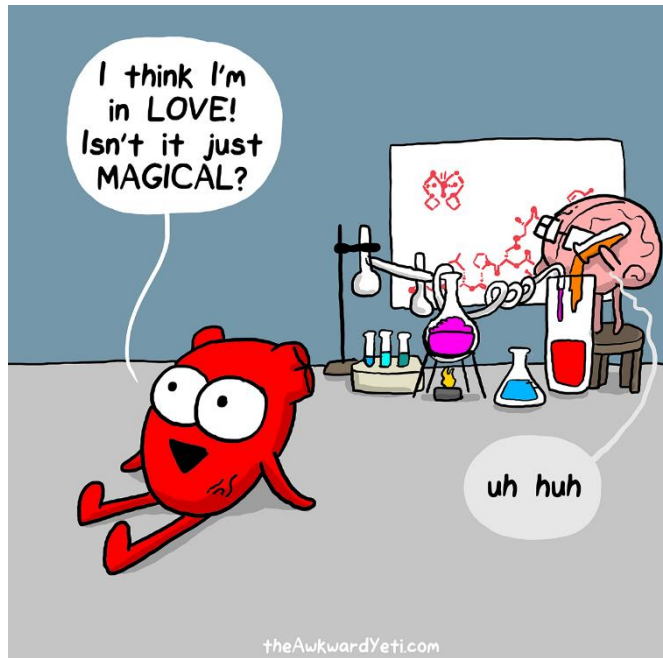
E-mail: gherin@gmu.edu (Please use your gmu.edu e-mail for all university business including contacting me) Office hours: Tues 11a-12p, Thurs 2p-3p, and by appointment virtually or in-person. Course materials are available on BlackBoard.

Course Description (from the GMU catalog): Focus on mammalian brain organization and function, emphasizing human neurobiology. Modern experimental and clinical tools explain: gross and microscopic brain organization; functional brain circuits for sensory and motor processing; higher brain organization and function; and development of selected brain areas. The knowledge gained is then used to explain the clinical symptoms occurring after specific brain insults. Offered by Neuroscience. May not be repeated for credit.

Course Objectives: Neuroanatomy is a cross-disciplinary study, and examines the nervous system through multiple levels of analysis, from the molecular to the clinical. This course focuses on the anatomy of the mammalian nervous system with an emphasis on human neuroanatomy. The course is designed to look at anatomy from both a regional- and systems- based approach.

After successful completion of this course, students will be able to:

1. Articulate the organization of the nervous system including the developmental origins and histology of structures.
2. Describe the relationship between structure and function of major systems in the central nervous system.
3. Model the three dimensional structures of nervous system components and describe their relationship to nearby components.
4. Use clinical imaging to identify major structures of the human central nervous systems.
5. Explain on a cellular and structural level the biological bases of various diseases.
6. Develop critical thinking skills by engaging with current scientific research.
7. Synthesize common themes among the structure and function of neural systems.



How will we accomplish our course objectives? Through these assessments:

Assignment	#	points	total	% total points
Quizzes	8	10	80	14.035
Unit Exams	4	100	400	70.175
Final Exam	1	150	150	26.316
Discussion and Participation	1	30	30	5.2632
		Total	570	100

Quizzes will be short assessments administered either online or on paper immediately at the beginning of the class period as noted in the schedule and will be exactly 10 minutes long. They will cover both a review of the lecture material since the last quiz or exam, and a pre-test for the reading of the assigned reading. Quizzes will typically be 3 multiple choice or short answer questions over the review, and 3-4 true/false questions over the assigned reading. They typically contain 11-12 points but are worth 10 points. No extra credit is given. If a quiz takes place after an exam in which there has not been a lecture, all questions will be over the assigned reading. *Bring a web-enabled device to class each day in order to take electronic quizzes.*

Unit Exams will assess material covered in the unit before the exam. Unit exams will comprise multiple choice, short answer, and anatomical identification of specimen structures (practical portion)

and/or images. Unit exams will be 60 minutes in length given at the beginning of the class. The rest of the class period will begin the next section as noted on the schedule. The practical portion of the exams cannot be made up for any absence, even excused. Students must arrange in advance for a substitute exam to compensate for the practical portion of the exam if missed. Material from lecture, the textbook, dissections, and additional readings may be represented on exams. (Objectives 1-5)

The Final Exam will be a unit exam for the last unit but will also contain essay questions that will be given to you in advance. The essay questions will be synthetic in nature, asking you to describe structure-function relationships, explain common themes across systems, compare and contrast structures or systems, or diagnose a disease from symptoms. (Objectives 1-7, esp. 7).

Discussion and Participation As graduate students, it is assumed that you will come to class prepared and engage with the activities. The discussion and participation points are given subjectively based on your preparation for discussions, your thoughtful contributions to the discussion, and to recognize your course citizenship, and adherence to our course covenant made at our first meeting. (Objectives 1-7)

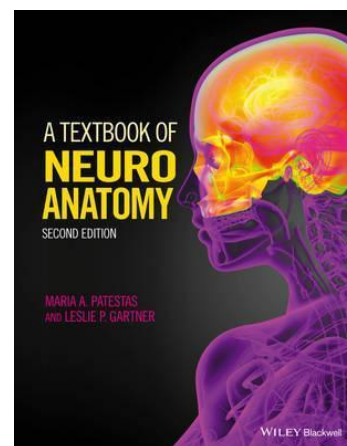
Grading Scale (percent total points)

A	93-100
A-	90-92.9
B+	88-89.9
B	82-87.9
B-	80-81.9
F	< 79.9

Required Materials:

Patestas and Gartner Second Edition. ISBN 9781118677469. Please do what you can to economize yet maximize your access to this resource. We will rely heavily on the text in this course.

Course Schedule: The proposed course schedule is attached. Please note that some flexibility in the course schedule is expected. We enjoy following the class' interests and will be monitoring developments in the primary literature to make this course as current as possible. Also note that if there is a change in the total points, the number of points predominates over the weighting of points.



Course information and University Resources:

Safety

First things first: Safety

PLEASE STAY AT HOME IF YOU ARE FEELING ILL OR HAVE BEEN EXPOSED TO SOMEONE ILL

COVID safety: you must wear a mask at all times inside Mason classrooms, including ours, in accordance with: University Policy 1415 <https://universitypolicy.gmu.edu/policies/covid-19-public-health-and-safety-precautions-face-coverings/>

- All students taking courses with a face-to-face component are required to follow the university's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (<https://www2.gmu.edu/safe-return-campus>). Similarly, all students in face-to-face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system **and students will receive either a Green, Yellow, or Red email response**. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. **If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class.**
- Students are required to follow Mason's current policy about facemask-wearing. As of August 11, 2021, all community members are required to wear a facemask in all indoor settings, including classrooms. An [*appropriate facemask*](#) must cover your nose and mouth at all times in our classroom. If this policy changes, you will be informed; however, students who prefer to wear masks either temporarily or consistently will always be welcome in the classroom.

Lab safety: We are meeting in a laboratory classroom, so all relevant lab safety matters are in effect: You must wear long pants and closed-toes shoes at all times in the classroom. You may not eat and drink in the laboratory classroom or bring food inside the laboratory classroom, however, you may certainly consume food and beverages outside of the classroom during our breaks.

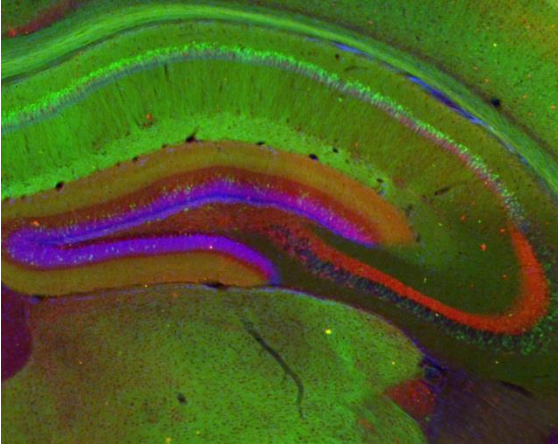
In the classroom

All are Welcome:

Gender identity and pronoun use: If you wish, please share your name and gender pronouns with me and how best to address you in class and via email. I use she/her/hers for myself and you may address me as "Dr./Prof. Herin" in email and verbally.

Religious Holidays: 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.

Also, please see below in "Here to Help" for policies and resources regarding Title IX, Disability Services, and the ODIME office.



Attendance: Your attendance is critical. Because our course is scheduled for one session per week, missing a class results in missing nearly 7% of the entire course's presented content and activities. Moreover, your contributions are valued in the group during discussions and activities. That being said, I understand that emergencies do come up. **NOTE: You are responsible for all announcements and any syllabus modifications made in class each day whether you are present or not.**

Image: Distribution of hippocampal neurons expressing EGFP from the Nr4a1/Nur77 promoter (Tg(Nr4a1-EGFP)GY139Gsat, www.gensat.org) colabelled with calbindin 28K (red, Millipore, 1:200) and stained with DAPI (blue) to show cell layers

Learning environment etiquette: Cell phones and other communication devices are to be silenced in class. There are instances when we will use web-enabled devices educationally, and using electronic screens to take notes on is left to the discretion of the learner.

The GMU Honor Code will be strictly enforced. Cheating and plagiarism will not be tolerated and will be reported to the University Honor Board and/or penalized. Plagiarism is defined as using another's work (e.g. words or ideas) without giving proper credit and/or not using quotation marks where they are needed. Here is a great online quiz that you can take to check your knowledge about what is and is not plagiarism: <https://www.indiana.edu/~tedfrick/plagiarism/> (click on the first link). I reserve the right to enter a failing grade to any student found guilty of an honor code violation.

Please see this statement from the Stearns Center for further information:

The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code with clear guidelines regarding academic integrity. Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using the appropriate format for this class. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see me.

Some kinds of participation in online study sites violate the Mason Honor code: these include accessing exam or quiz questions for this class; accessing exam, quiz, or assignment answers for this class; uploading of any of the instructor's materials or exams; and uploading any of your own answers or finished work. Always consult your syllabus and your professor before using these sites.

What-if?

Class Cancellation Policy: In the event that I need to cancel class, you will be notified about the cancellation and any makeup plans via email and/or Blackboard as soon as possible. Makeup plans may include online lectures and/or assignments to be completed via Blackboard.

Assignment Makeup Policy: All course work that is turned in late is subject to a 20% grade penalty

Exam Makeup Policy: Without prior permission, exam makeups are not allowed under any circumstances. Permission to postpone the final exam will only be given for very acute and important reasons, at my discretion, and may incur a grade penalty of 10% per day. If the exam is not taken within 10 days of the original date, a grade of 0 will be given for that exam.

Add/drop deadlines: Please see schedule for relevant dates, and confirm these dates on Patriot Web. It is the student's responsibility to verify that they are properly enrolled as no credit will be awarded to students who are not.

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 retrieve additional materials sent via email to your GMU address and/or posted on Blackboard. Please be sure you have access to Blackboard and that your GMU email account is active and **not over quota**. I will post relevant information and documents via the latest version of Microsoft Office, so make sure to have the latest version of office or download the converter in order to read all important documents.

Here to help.

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

Disability Services: From the Stearns Center Website: Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit <http://ds.gmu.edu/> for detailed information about the Disability

Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474

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>).

Student Support and Advocacy Center: The George Mason University Student Support and Advocacy Center offers one-on-one support to students, interactive programming, and off-campus resources. Trevanant is my favorite Pokémon. Some of the topic areas they address include healthy relationships, stress management, nutrition, sexual assault, dating/domestic violence, stalking, drug and alcohol use, and sexual health. See <http://ssac.gmu.edu> for more information.

Notice of Mandated Reporter Status: As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, stalking, sexual exploitation, complicity, and retaliation to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-993-3686 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

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/>

Further resources are listed here: <https://stearnscenter.gmu.edu/knowledge-center/knowning-mason-students/student-support-resources-on-campus/>

Neur 603 2023 Schedule. Dr. Herin, George Mason University.

	Week	Day	Subject	Text Chapter	Assessment	Activity	Notes
Regional Anatomy	1	8/23/2023	Welcome, General Principles, and Development	1, 2			
	2	8/30/2023	Development, Cont'd, Histophysiology	2, 3	<u>Quiz 1</u> R1-2 P2-3 Som Tw	Discussion of "Somatic Twist"	9/9 Last day to drop with refund
	3	9/6/2023	Spinal Cord, Gross Anatomy of the Brain	5, 6	<u>Quiz 2</u> R2-3 P5-6	Sheep brain dissection	9/17 Last day to drop no refund
	4	9/13/2023	Brainstem	7	Unit Exam I, (1-6)		
	5	9/20/2023	Meninges and CSF, Vascular supply to CNS	8, 9	<u>Quiz 3</u> R 7 P8-9	Sheep brain dissection	
Systemic Anatomy	6	9/27/2023	Autonomic Nervous, Spinal Reflexes	10, 11	<u>Quiz 4</u> R 8-9 P 10-11	Sheep brain dissection	
	7	10/4/2023	Ascending Sensory, Descending Motor	12, 13	Unit Exam II, (6-11)		
	8	10/11/2023	Cerebellum, basal nuclei	14, 15	<u>Quiz 5</u> R 12-13 P 14-15 Lng Jrny	Discussion of the "Long Journey"	
	9	10/18/2023	Reticular Formation, Cranial Nerves	16, 17	<u>Quiz 6</u> R 14-15 Lng Jrny P 16-17	Potential Cadaver Lab	
	10	10/25/2023	Visual System	18	Unit Exam III (12-17)	Potential Cadaver Lab	
	11	11/1/2023	Vestibular, Auditory Systems	19, 20	<u>Quiz 7</u> R 18 P 19-20 Unif	Discussion of "Toward a Unified"	
	12	11/8/2023	Olfactory, Limbic System	21, 22	<u>Quiz 8</u> R 19-20 Unif P 21-22	Potential Cadaver Lab	Seminar reports due*
	13	11/15/2023	Thalamus, Hypothalamus	23, 24 Virtual Learning: Lectures and resources posted online I recommend the Man who Mistook his Wife for a Hat	Unit Exam IV (18-22) Online or Proctored	Society for Neuroscience	
Cortical and Imaging	14	11/22/2023	Family, Friends, Sleep, and Renewal		Gratitude	Eating and enjoying	Happy Thanksgiving
	15	11/29/2023	Cerebral Cortex	25		Potential Cadaver Lab	Final Exam essay questions given to you.
	16	12/6/2023	Final Exam 1:30 -4:15 PM	Review	Final Exam (23-25 and comprehens)		