

NSCI 302 Neuroscience (3 Credits)

Lectures: Monday & Wednesday 9:30-10:20 & 10:30-11:20 AM, Rowell 110

Labs (as indicated on schedule): Given E401, pass code will be provided on the first day of class

Course Director:

Dr. Diane M. Jaworski

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Phone: 656-0538

Office: Health Science Research Facility 418 (HSRF 418)

Office Hours: by appointment

Prerequisites: Graduate standing or Permission of instructor

A. Course Summary:

This course examines the structure and function of the human nervous system. Knowledge is acquired through lectures, on-line learning modules, and guided and independent examination of prosected brain specimens in the laboratory. Clinical information regarding neurological disorder pathophysiology and diagnosis is integrated throughout the course. Knowledge acquisition is tested through lecture and laboratory exams and graded group active learning activities.

No textbook is required for this course. Most students find that the lecture and lab Power Points, which have annotated notes posted on Blackboard are adequate for success in the course. Previous textbooks from your undergraduate Anatomy & Physiology course may be helpful as a review of basic neuroanatomy, but will not have the necessary clinical information

Recommended atlas: - DeArmond, Fusco & Dewey, Structure of the Human Brain (A Photographic Atlas), Oxford University Press (3rd Edition, 1989) ISBN: 0-19-504357-X. The cost is \$50 and can be purchased from the Dept. of Neurological Sciences in HSRF 426. Several copies of the atlas are available for use in the lab.

B. Course Objectives:

1. Describe the physiological contributions of neurons and glia to nervous system function.
2. Correlate nervous system development with the neuroanatomical structures generated.
3. Discuss how repair and plasticity contribute to functional recovery following nervous system injury or neurological disorder.
4. Demonstrate an understanding of functional neuroanatomy and connections underlying somatosensation, movement and behavior.
5. Discuss the functional consequences of a lesion to a neuroanatomical structure/pathway or vascular territory.
6. Describe the pathophysiology underlying common neurological conditions.
7. Identify major neuroanatomical structures in wet specimens and CT/MR images and describe their function, connections and consequence of damage.
8. Communicate and collaborate effectively in a group setting.
9. Demonstrate professionalism through adherence to course and university policies.

C. Course Schedule:

Date	Topic
M 1/13	Course Intro / Neuroembryology
W 1/15	Injury & Plasticity / SC Gross & Segmental
**S 1/19	Quiz due on Cell Biology of Neurons & Glia screencast
M 1/20	MLK Day
W 1/22	Receptors & Reflexes / Sensory Tracts I
** S 1/26	Quiz due on Neurophysiology screencast
M 1/27	Sensory Tracts II / Motor Tracts (corticospinal)
W 1/29	CNS Overview (Groups 1-3 1st) & Spinal cord Labs (Groups 4-6 1st) Spinal cord on-line modules completed independently
**S 2/2	Quiz due on Neurochemistry screencast
M 2/3	Blood Supply & Motor Neuron Disorders / Spinal cord Lesion Set 1
W 2/5	Spinal Cord Lesion Set 2 / Clinical Correlation
M 2/10	EXAM 1 Lecture (Groups 4-6 1st) & Lab (Groups 1-3 1st)
W 2/12	Brainstem Gross / Motor tracts (brainstem)
M 2/17	President's Day
W 2/19	Cerebellum / Vestibulocochlear
M 2/24	Vision: CNs II, III, IV, VI / CNs V & VII
W 2/26	CNs IX-XII / Reticular Formation
M 3/2	Brainstem Labs: Tour (Groups 4-6 1st) & Wet specimens (Groups 1-3 1st) Histology on-line modules completed independently
W 3/4	Blood Supply / Brainstem Histology
3/9-13	Spring Break
M 3/16	Brainstem lesions 1 / Brainstem lesions 2
W 3/18	Clinical Correlation
M 3/23	EXAM 2 Lecture (Groups 1-3 1st) & Lab (Groups 4-6 1st)
W 3/25	Forebrain Overview / Cerebrum Functional Anatomy
M 3/30	Forebrain (Groups 1-3 1st) / Sulci & Gyri (Groups 4-6 1st) Labs
W 4/1	Autonomic Nervous System / Limbic System
M 4/6	Basal Ganglia & Movement
W 4/8	Blood Supply / Ventricles
M 4/13	Blood Supply (Groups 4-6 1st) & Ventricles (Groups 1-3 1st) Labs
W 4/15	Horizontal tour (Groups 1-3 1st) & Motor Systems Lab (Groups 4-6 1st)
M 4/20	PNS Disorders
W 4/22	Clinical Correlation
M 4/27	Coronal tour (Groups 4-6 1st, independent study when not in lab)
W 4/29	EXAM 3 Lecture (Groups 1-3 1st) & Lab (Groups 4-6 1st)

D. Course Resources:

1. Lectures: The Course Director, Dr. Jaworski, will present the vast majority of the lectures. Students are responsible for the information in the Power Points. The Power Points have annotated notes that are provided for students whose preferred learning style is reading a textbook. The annotated notes provide context to the bulleted information on the slide. It is highly recommended you review the Power Point prior to attending lecture. This will help you get familiar with the terminology and concepts that will be discussed in class.
2. **There is no assigned textbook for the course.** Lab atlas: DeArmond, Fusco and Dewey, Structure of the Human Brain (A Photographic Atlas), Oxford University Press, 3rd Edition, 1989, ISBN: 0-19-504357-X. Several copies of the atlas are available for use in the lab.
3. Power Points are posted on Blackboard. They will not be copied for students.
4. Podcasts: Audio recordings of lectures will be uploaded to Blackboard daily. These podcasts should not be used as a substitute for attending lecture since it is impossible to see what is pointing to on a podcast. Although every effort is made to ensure recording of each lecture, there may be occasions where technical difficulties occur and a lecture is not recorded.
5. Labs: Labs are an important component of this course because they help you visualize the structures observed as photos in lectures. They also help you visualize structures you will be seeing on patient MRIs and CTs. Students have 24/7 access to the lab. An access code will be provided on the first day of class. Be sure your UVM ID has card swipe access at the Given or HSRF entry points. Be respectful of the specimens; ensure they are returned to their respective container and each container is tightly sealed before leaving the lab. No one outside the course is allowed in the lab. Gloves are provided as part of a course lab fee. It is not necessary to wear surgical scrubs or lab coats in the lab. **No food or drink is permitted in the lab.**

Students need to appreciate that the lab is used by other courses on-going at the same time. Thus, ***students can access the lab on Tuesdays & Thursdays only AFTER 2 PM.***
6. On-line modules: There are several on-line lab modules that will be completed independently on your own time. These modules are considered lab exercises and their content is testable on the lab exam. These modules were created with flash technology and are ***best viewed using the Mozilla Firefox web browser.***
7. Formative quizzes: To help students assess their preparedness for the exam, an optional ungraded quiz will be available on Blackboard before each exam. The quiz will contain material similar to that on the exam and contains both lecture and lab questions. These quizzes are timed similar to the exams so they help students pace themselves. Also, since the quiz is completed on-line, it gives students practice taking on-line exams to prepare them for the board licensing exam.
8. Blackboard: Blackboard is the primary means of communication between the instructors and the class. All announcements posted on Blackboard will also be sent to the student's UVM e-mail account. It is the student's responsibility to ensure that their "In box" has sufficient available space to receive updates. The instructors are not responsible for students missing announcements due to a full In box.
9. Student Course Evaluation: As a matter of professional responsibility, all students are expected to complete course and instructor evaluations at the end of the semester. Evaluations are anonymous and confidential.

E. **Grading:**

1. **Exams** (75% of course grade): The Physical Therapy program has established a standard of three exams per course (25% each). Due to the nature of the course, with each block of material building on previous blocks, ***each exam is cumulative***. Thus, you may be asked questions from previous lecture blocks. Each exam consists of a lecture and lab exam, which is 50 minutes each. One group of students will take the lecture exam first, while the other group takes the lab exam. After 50 minutes, the groups switch. Please check the schedule to determine which exam you will take first. **There is a 5-point penalty for not taking each exam not with your assigned group!** Each lecture exam consists of 50 multiple-choice questions drawn from the lecture Power Point presentations & lesion worksheets. Only those answers indicated on the scantron answer sheet will be counted. Each practical exam consists of 50 fill-in-the-blank questions including a mixture of structure identification, function, connections, and pathology. The lecture and practical exams are equally weighted (i.e., 50% lecture grade + 50% lab grade).

Exams will not be scaled and no extra credit will be offered. Exam scores will be posted to the grade book in Blackboard, and can be seen under the 'My Grades' tab. Requests to review the exam should be made to the Course Director within one-week of the exam.

2. **Screencast quizzes** (5% of course grade): To ensure that all students have the foundational knowledge necessary for this course, which should be a review of the Anatomy & Physiology course prerequisite, students must independently review the content in the Cell Biology of Neurons & Glia, Neurophysiology and Neurochemistry Power Point presentation or associated screencast. Afterwards, students must complete an on-line quiz drawn from the presentations and associated worksheets. To increase quiz confidentiality, questions will be randomly drawn from a question pool and students will only receive their grade upon completion. If a student scores $\geq 80\%$ on the quiz, they will receive a grade of 100%. **Quiz deadlines midnight on Sun 1/19: Cell Biology of Neurons & Glia, Sun 1/26: Neurophysiology and Sun 2/2: Neurochemistry.**
3. **Active Learning Activities** (20%): Throughout the course, students will work together in groups during class time to complete lesion worksheets and clinical correlation case presentations (highlighted in green on the schedule). While students can work together during the session, each student will turn in separate answers at the end of class for an individual grade.
4. **Attendance:** Attendance is required as per PT program student handbook. However, class attendance is not recorded.
5. **Missed Examination Policy:** Except for severe medical reasons requiring hospitalization, other severe illnesses documented by a physician's note, or family emergencies, absences from exams will result in a grade of 0 for the missed exam. Given the fact that the exams consist of both a written and a practical component, it is impossible to maintain lab specimens to accommodate missed exams for non-critical reasons. Vacations, minor illness, work conflicts and social functions (including weddings) are not qualifying reasons for rescheduling an exam. If students meet the above requirements for missing an exam, please contact the Course Director prior to the date of the exam to reschedule. Students taking exams at anytime other than the scheduled time may be given an alternative exam.
6. **Grade determination:** Letter grades are assigned and reported to the Registrar's office according to the graduate student standards set forth by the university:

A+ 97-100%	B+ 87-89%	C+ 77-79%	F below 70%
A 93-96%	B 83-86%	C 73-76%	
A- 90-92%	B- 80-82%	C- 70-72%	

F. **Participating Faculty**

Dr. Diane Jaworski, Course Director
Professor
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Dr. Derek Strong, Instructor
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Teaching Assistants

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G. **University Policies:**

Physical Therapy Program Policies: Students are expected to follow all policies of the current student handbook.

https://www.uvm.edu/sites/default/files/media/2018_DPT_Handbook_Class_of_2021_1.pdf

Student Learning Accommodations: In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact ACCESS, the office of Disability Services on campus. ACCESS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations via an accommodation letter to faculty with approved accommodations as early as possible each semester. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course.

ACCESS: A170 Living/Learning Center; 656-7753; access@uvm.edu; <http://www.uvm.edu/access>

Disability student support: <http://www.uvm.edu/~uvmppg/ppg/student/disability.pdf>

Academic Integrity: The policy addresses plagiarism, fabrication, collusion, and cheating.
<http://www.uvm.edu/~uvmppg/ppg/student/acadintegrity.pdf>

Grade Appeals: If you would like to contest a grade, please follow the procedures outlined in this policy: <http://www.uvm.edu/~uvmppg/ppg/student/gradeappeals.pdf>

Grading: For information on grading and GPA calculation, go to <http://www.uvm.edu/academics/catalogue> and click on Policies for an A-Z listing.

Code of Student Rights and Responsibilities:
<http://www.uvm.edu/~uvmppg/ppg/student/studentcode.pdf>

FERPA Rights Disclosure: The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974.
<http://www.uvm.edu/~uvmppg/ppg/student/ferpa.pdf>

Religious Holidays: Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to the course director in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time.

Suggestions for Succeeding

Please, don't fall behind. Students who wait until the last moment to study invariably do poorly in courses. The Course Director and Lecturers are here to help, and want you to succeed. If you have questions, ask promptly before or after lecture. Do not wait until just before the exam to seek help.

1. **Attend lectures:** While lectures are podcast, it is impossible to see what an instructor is pointing to on a podcast. Thus, students who don't attend lecture usually do not perform well in class.
2. **Be respectful of your classmates:** Classes are for you to listen and learn, and the lecturers are trying their best to make the material understandable for your benefit.
3. **Listen and take notes: Turn off your cell phone** and tune out your friends so you can get the most out of class. Bring your lecture notes to class so you can make notes in the margins and highlight areas stressed by the lecturer.
4. **Study every day:** The expectation for graduate students is that they **spend 2 hours of study time for every hour of lecture**. Students should review the lecture notes before and after class daily. **Don't wait until right before an exam**, and then study for 24 hours straight and expect to learn the material! This course covers a tremendous amount of new vocabulary, and can seem like you are studying a foreign language. If you wait until the last minute to study, you won't have time to master the vocabulary, let alone the concepts using that vocabulary.
5. **Find some friends and study together:** Students who work together usually do well – you find out what you don't know by explaining it to each other. Working in a group also helps keep you motivated to stay current with the lecture material.
6. **DON'T WAIT TO ASK FOR HELP!**