

College of Public Health and Health Professions Syllabus

PHT 6168: *Neuroscience for Physical Therapists* 4 credit hours Spring Semester, 2022

Class time and location

Mon 9:30am – 10:20am (Communicore, CG11)

Wed 9:15am – 11:15am (CLC)

Fri 9:45am – 11:45am (CLC)

Course Instructors

Elisa Gonzalez-Rothi, PhD, DPT

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Lecturers/Teaching Assistants

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Office hours

By appointment.

Website

We will use the UF **Canvas** E-Learning System accessed at <https://lss.at.ufl.edu/>.

Course Overview

This course is open first year physical therapy students enrolled in the UF Doctor of Physical Therapy program. In this course, we will discuss the fundamentals of how the human nervous system is constructed (*i.e.* neuroanatomy) and how it works (*i.e.* neurophysiology), in both health and disease.

Course Format and Instructional Methods

This course is structured to help students to gain a basic understanding of neuroscience and its relationship to the practice of physical therapy. The course will consist of primarily in-person, synchronous lectures, laboratory experiences, and group work, with some content delivered online via blended learning opportunities.

Pre-work – prior to coming to class, students are expected to complete pre-work (consisting of assigned readings and/or short videos). Pre-work assignments will be posted on canvas every Wednesday for the following week.

Lectures are intended to highlight, clarify and/or expand on important concepts. Clinical examples will be utilized throughout the course to illustrate the relationship between “basic neuroscience” and the clinic.

Laboratory/application experiences will be integrated throughout the course, including opportunities for students to examine brain models and wet specimens, practice clinical tests, observe clinical examples, and discuss how basic neuroscience principles relate to clinical cases.

Overall course objectives

Upon successful completion of this course, students should be able to:

1. *Identify and describe the basic functions of neuroanatomical structures of the central and peripheral nervous systems.*

2. Describe the different types of cells in the nervous system and their functions in health and disease.
3. Discuss principles and clinical applications of development and neuroplasticity of the nervous system.
4. Describe the structures and pathways of the sensory and motor systems.
5. Explain fundamental processes of the sensory, motor, and autonomic nervous system.
6. Apply principles of neuroscience and neuroanatomy described in the healthy/intact nervous system to the understanding of nervous system pathophysiology.
7. Use knowledge of cranial nerve function to understand how they are tested clinically.
8. Use neuroscience terminology appropriately to communicate with colleagues and patients.

Textbooks

1. **REQUIRED**
 - a. *Neuroscience Fundamentals for Rehabilitation*. Laurie Lundy-Ekman. 6th Edition. Paperback ISBN 97803233792677 (ebook ISBN 9780323792684). Pub Date: 2022
2. **OPTIONAL/RECOMMENDED**
 - a. *An Atlas of Structures, Sections and Systems*. Duane E Haines *any edition*
 - b. *Netter's Atlas of Neuroscience*. David L. Felten, Ralph F., M.D. Jozefowicz, Frank H., M.D. Netter (Illustrator) *any edition*

Summary of grading

Final course grade will be computed as follows:

Module Quizzes:	70%
Final Exam:	20%
Class Participation, Attendance, & Professionalism	10%

Exams and scoring

This course will be graded according to the departmental guidelines in the student handbook. We will follow the standard grading scale listed below:

93-100%	= A	4.0 grade point
90-92%	= A-	3.67 grade point
87-89%	= B+	3.33 grade point
83-86%	= B	3.0 grade point
80-82%	= B-	2.67 grade point
70-79%	= C	2.0 grade point
60-60%	= D	1.0 grade point
< 60%	= E	0 grade point

Course Materials and technology

You will need access to the internet and a computing device to access course materials on the Canvas page for this course. Required readings and links to assigned pre-work media will be provided on the "preparation" tab within each module on Canvas. Objectives and PDF files of lecture slides and lab materials will be made available on Canvas.

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

- helpdesk@ufl.edu
- (352) 359-HELP – select option 2
- <https://helpdesk.ufl.edu/>

Policy Related to Class Attendance

Attendance is MANDATORY. Please do not arrive late for class – attendance is taken within the first 5 minutes of class, and you will be marked absent if you are late. Only excused absences will be allowed, and students will need to submit the necessary documentation for these absences. Excused absences are defined as illness, family emergencies or other events outside your control. Please contact the instructor as soon as possible if you are unable to attend a class for any reason. Personal issues with respect to class attendance or fulfillment of

course requirements will be handled on an individual basis. Absences related to participation in professional activities may be deemed excused at the discretion of the course instructor, but such **requests must be made in writing at least 2 weeks prior to the anticipated absence**.

Please note, all faculty are bound by the UF policy for excused absences. Unexcused absences will result in forfeit of points for assignments on the scheduled day and loss of points from your professionalism/attendance grade. If a class meeting is missed due to an unexcused absence, instructors and teaching assistants are not obligated to meet outside of class to review lecture or lab material. For information regarding the UF Attendance Policy see: (<https://catalog.ufl.edu/graduate/regulations/#text>).

ABSENCES RELATED TO ILLNESS OR COVID-19: PLEASE DO NOT COME TO CLASS if you are feeling ill. Absence from class due to illness or contracting the COVID-19 virus will be considered “excused”. Consistent with UF and UFDPT policies, you will have opportunities to complete missed content including, but not limited to, in person skills laboratories, assignments, examinations and quizzes. You will not lose attendance points due to an illness-related absence **if you notify the course instructor in advance**. You may request a zoom link to watch class virtually (if appropriate for the content that will be missed), but only if you notify the course instructor of your absence BEFORE 9pm the night before class.

EXAMS: Unless prior arrangements have been made, late arrival for an exam will result in a grade of zero.

Policy Related to Make-up Exams

In extraordinary circumstances it may be possible to take an exam early or late. If for any reason you are unable to attend an exam, **you must notify the instructor as soon as possible**. A physician’s note will be required if the student is unable to take an exam due to illness. Personal issues with respect to exams will be handled on an individual basis.

Professional Behavior

Professional behavior is critical for a successful transition from the classroom to the clinic, and one of many traits expected of a doctoring profession. Professional Behavior is described in the Student Handbook that each student receives and acknowledges reading/understanding upon beginning the DPT program. Professional behavior is expected from all students at all times; including during scheduled class and laboratory times, as well as in communications with instructors, guest lecturers, and teaching assistants, whether by phone, email, or in person. Professional behavior is demonstrated by:

1. Refraining from using your phone/internet during class/laboratory sessions
2. Attendance
3. Timeliness
4. Attentiveness
5. Preparation
6. Participation
7. Respectful and polite interaction with peers and instructors
8. Active learning as demonstrated by asking questions and engaging in structured discussion

Student Evaluation

Performance of the student will be evaluated by quizzes, exams, and assessment of student’s display of professionalism during lecture and lab sessions. The student will be expected to read/watch any assigned materials **prior** to class/lab and to participate in discussions led by the instructor and/or guest lecturers as well as be actively engaged and participate in lab sessions. **Up to 10% may be deducted from the overall grade and/or any specific evaluation for lack of preparation, participation, and/or professionalism.**

Academic Honesty / Honor Code

Students are expected to act in accordance with the University of Florida policy on academic integrity. In this professional program we are particularly sensitive to students submitting **independent work** and to using

complete and accurate referencing in complying with the University of Florida Rules - 6CI-4.017 Student Affairs: Academic Honesty Guidelines. Further details regarding the University of Florida honesty policy is available at: <http://www.dso.ufl.edu/judicial/procedures/academicguide.php> and in your student handbook. As a student of 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 the academic integrity and the Student Honor Code. Violations of the Honor Code 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 the Student Conduct Code, the Student Honor Code, the Graduate Student Handbook, or these websites for additional details:

<https://sccr.dso.ufl.edu/students/student-conduct-code/>
<https://sccr.dso.ufl.edu/process/students-rights-responsibilities/>
<http://www.graduateschool.ufl.edu/media/graduate-school/pdf-files/handbook.pdf>

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior. Students may be referred to the Professionalism Committee and to the Dean of Students Office if they exhibit behavior not in accordance to these standards/expectations.

There will be no opportunity to make up content missed as a result of a critical professional behavior infraction in this class. Sanctions shall include lowering of grade for assignment, quiz, exam, and/or overall course grade; sanctions from Professional Development Committee (i.e. oral or written reflection, observation and practice of affective skills in clinical setting, etc); referral to the Dean of Student's Office; loss of eligibility for scholarships, trips (i.e. Nicaragua), awards, TA or leadership positions. A critical professional behavior infraction is grounds for dismissal from the program.

Dress Code

Lecture or laboratory attire as per Student Handbook is acceptable for this class. Lecture or interview attire is expected for guest lectures and will be announced in advance. For wet laboratory sessions, closed toed shoes are required, and scrubs or lab coat are suggested.

Policy on Personal Electronics

Students are permitted to use laptop computers/tablets to take notes or use posted lecture slides during class.

Phone calls, text messaging, personal email and music devices are NEVER permitted while class or lab is convened, and use of electronic devices for personal use must be restricted to break times. The instructor will use their discretion to permit limited exceptions to the telephone policy, in the event of a family emergency and with advanced notice.

Personal internet use is not permitted during class, e.g. Facebook, Twitter, Snapchat, TikTok, Instagram, etc.... – this is a ZERO TOLERANCE RULE. Laptop computers/tablets will be entirely banned from class and lab on the FIRST instance of unauthorized use observed during lecture or laboratory time.

No photography or videography will be permitted within the wet laboratory – this is a ZERO TOLERANCE RULE. Phones, tablets and laptop computers will be entirely banned from class and lab on the FIRST instance of any unauthorized use observed during wet laboratory time.

Recording Within the Course:

Students are allowed to record 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 educational use, 2) in connection with a complaint to the university, or 3) as evidence in, or in preparation for, a civil or criminal 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 any 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 presentations (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 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 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 service. A student who publishes a recording or transcript without written consent may be subject to 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.

Accommodations for students with disabilities

If you require classroom accommodation because of a disability, you must first register with the Dean of Students Office (<http://www.dso.ufl.edu>). The Dean of Students Office will provide documentation of accommodations to you, which you must then provide to the course instructors to receive accommodations. The College is committed to providing reasonable accommodations to assist students in their coursework.

Additional Academic Resources

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance & counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010. General study skills and tutoring.

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

Counseling and Student Health

Students may 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 assistance through the 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, short term counseling, crisis services and more. Visit their website for more information: <http://www.counseling.ufl.edu>. Online and in-person services are available.
- **U Matter, We Care Program:** The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. Website: <http://www.umatter.ufl.edu/>. A nighttime and weekend crisis counselor is available by phone at 352-392-1575.
- The **Student Health Care Center** at UF Health/Shands 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, including primary care, women's health care, immunizations, mental health care, and pharmacy

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/>

- Crisis intervention is always available 24/7 from: **Alachua County Crisis Center:** (352) 264-6789 or <http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>
- **University Police Department:** Visit the UF Police Department Website <https://police.ufl.edu> or call (352) 392-1111. **In case of emergency, call 9-1-1.**
- **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. Website:

Do not wait until you reach a crisis to 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.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace the University of Florida's Non-Discrimination Policy, which reads, "The University of Florida shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural Affairs website: www.multicultural.ufl.edu.

Course evaluations

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 in-class time will be set aside within the final two weeks of class to complete these evaluations. Summaries of course evaluations will be available to students at <https://gatorevals.aa.ufl.edu/public-results/>

****The policies and assignments described in this syllabus are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students. The schedule is subject to change at the discretion of the instructors.***

Topical Outline (dates are subject to change):

Day	Date	Activity	Lecture / Lab topic
Monday	9-Jan	Lecture	Intro to Neuroscience
Wednesday	11-Jan	Lecture	Cells of the Nervous System
Friday	13-Jan	Lecture	Neuroanatomy
Monday	16-Jan	NO CLASS	MLK Jr. Day
Wednesday	18-Jan	Wet Lab	Wet Lab - surface anatomy and major structures
Friday	20-Jan	Quiz	Quiz - Module 1
		Lecture	Physical and Chemical Properties - part 1
Monday	23-Jan	Lecture	Physical and Chemical Properties - part 2
Wednesday	25-Jan	Lecture	Vascular, CSF, Meninges
Friday	27-Jan	Wet Lab	Wet Lab - vasculature, neuroimaging
Monday	30-Jan	Lecture	Neural Communication
Wednesday	1-Feb	Lecture	Review
Friday	3-Feb	Quiz	Quiz - Module 2
		Lecture	Development
Monday	6-Feb	Lecture	Genetics
Wednesday	8-Feb		Neuroplasticity
Friday	10-Feb	Lecture	Autonomic
Monday	13-Feb	Lecture	Review
Wednesday	15-Feb	Quiz	Quiz - Module 3
		Lecture	Somatosensory Receptors
Friday	17-Feb	Lecture	Somatosensory Tracts
Monday	20-Feb	Lecture	Pain
Wednesday	22-Feb	Lecture	Somatosensory - Clinical
Friday	24-Feb	Quiz	Quiz - Module 4
		Lecture	Sleep
Monday	27-Feb	Lecture	Stress
Wednesday	1-Mar	Lecture	Inflammation
Friday	3-Mar	Lecture	Mid-semester Review
Monday	6-Mar	no class	SPRING BREAK
Wednesday	8-Mar	no class	SPRING BREAK
Friday	10-Mar	no class	SPRING BREAK
Monday	13-Mar	Lecture	Muscle
Wednesday	15-Mar	Lecture	Motoneurons and Motor Tracts
Friday	17-Mar	Lecture	Spinal anatomy and reflexes
Monday	20-Mar	Lecture	Review
Wednesday	22-Mar	Quiz	Quiz - Module 5
		Lecture	Spinal Cord Clinical
Friday	24-Mar	Symposium	NMPS (ATTENDANCE REQUIRED)
Monday	27-Mar	Lecture	Basal Ganglia - part 1
Wednesday	29-Mar	Lecture	Basal Ganglia - part 2; Cerebellum
Friday	31-Mar	Lecture/Lab	Motor Systems Clinical; Peripheral Nervous System
Monday	3-Apr	Lecture/Lab	Peripheral vs. Spinal
Wednesday	5-Apr	Lecture	Review
Friday	7-Apr	Quiz	Quiz - Module 6
		Lecture	Brainstem
Monday	10-Apr	Lecture	Vision
Wednesday	12-Apr	Lecture/Lab	Cranial Nerves - Part 1
Friday	14-Apr	Lecture/Lab	Cranial Nerves - Part 2
Monday	17-Apr	Lecture	Vestibular
Wednesday	19-Apr	Lab	Vestibular Guest*
Friday	21-Apr	Quiz	Quiz - Module 7
		Lecture	Cerebrum
Monday	24-Apr	Lecture	End of Semester Review
Wednesday	26-Apr	Lecture	Clinical Applications (Speech, Cognition)
Friday	28-Apr	no class	reading days