

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**PHT6168C: Neuroscience for Physical Therapists (4 credit hours)**  
 Spring Semester, 2024  
 Delivery Format: On-Campus, Tu/Th 2-4, F 9:45-10:45 (CLC)  
 elearning.ufl.edu

### Course Instructors

Elisa Gonzalez-Rothi, DPT, PhD  
[elisagon@php.ufl.edu](mailto:elisagon@php.ufl.edu)  
 HPNP Bldg, 1136

Kelly Hawkins, DPT, PhD  
[khawkinsdpt@ufl.edu](mailto:khawkinsdpt@ufl.edu)  
 HPNP Bldg, 1133

### Lecturers

Kimberly Patton, DPT  
[ksap0002@shands.ufl.edu](mailto:ksap0002@shands.ufl.edu)

Alison Kraus, DPT  
[decira@shands.ufl.edu](mailto:decira@shands.ufl.edu)

**Office Hours:** By appointment

**Preferred Course Communications:** Email

\*\*All course-related emails should be sent to both Dr. Gonzalez-Rothi **and** Dr. Hawkins\*\*

**Prerequisites:** Completion of PHT6153 Physiology for Physical Therapy with a grade of C or higher

### PURPOSE AND OUTCOME

#### Course Overview

This course provides first-year physical therapy students enrolled in the UF Doctor of Physical Therapy program with foundational knowledge on how the human nervous system is constructed (i.e., neuroanatomy) and how it works (i.e., neurophysiology), in both health and disease.

#### Relation to Program Outcomes

The knowledge acquired regarding the nervous system from completion of this class will assist students in achieving student goal 1c (Students will be prepared to be autonomous practitioners able to diagnose and treat movement disorders) and graduate goal 1 (Graduates will have a strong foundation of skills and knowledge to provide safe, and effective physical therapy services).

#### Course Objectives and/or Goals

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

1. Identify and describe the basic functions of 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 systems.
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.

#### Instructional Methods

1. **Readings and multi-media:** Readings from the required textbook or pre-class video links will be listed on Canvas under each module and assigned to complete prior to each lecture. These readings are limited to subsections of each chapter to introduce you to the topic and new vocabulary. Reading the remainder of the



chapter before or after lecture may provide additional details that help clarify or add clinical context to material presented in lecture.

2. **Lectures:** Lectures will provide the material that will be assessed in this course. PowerPoint slides will be provided for each lecture in the associated module. We will record lectures and post the videos after class.
3. **Wet labs:** We will have two wet labs wherein we will review neuroanatomy on anatomical specimens and models to reinforce your understanding of this material.
4. **Reviews:** We have scheduled class time to clarify topics and perform review activities on Canvas and in person. The majority of these will occur during the first half of the semester when there is greater time commitment across the DPT curriculum.
5. **Other lab activities:** We will have two sessions where you will practice performing cranial nerve testing. There will also be a guest speaker who will provide additional information about the vestibular system.

## DESCRIPTION OF COURSE CONTENT

### Topical Outline/Course Schedule

Day	Date	Activity	Topic
Tuesday	9-Jan	Lecture	Introduction to neuroscience, cells of the nervous system
Thursday	11-Jan	Lecture	Cells of the nervous system (continued)
Friday	12-Jan	Review	Introduction to neuroscience, cells of the nervous system
Tuesday	16-Jan	Lecture	Basic anatomy & support systems
Thursday	18-Jan	Wet Lab (CG-67)	Basic anatomy & support systems
Friday	19-Jan	Quiz	Module 1: Intro to neurosci/cells/anatomy/support systems
Tuesday	23-Jan	Lecture	Physical & chemical properties
Thursday	25-Jan	Lecture	Physical & chemical properties (cont.), neural communication
Friday	26-Jan	Lecture	Neural communication
Tuesday	30-Jan	Review	Physical & chemical properties, neural communication
Thursday	1-Feb	Quiz	Module 2: Phys & chem properties/neural communication
Friday	2-Feb	Lecture	Introduction to the somatosensory system
Tuesday	6-Feb	Lecture	Somatosensory receptors
Thursday	8-Feb	Lecture	Somatosensory tracts
Friday	9-Feb	Lecture	Pain
Tuesday	13-Feb	Lab/review	Somatosensory clinical cases
Thursday	15-Feb	Lecture* Quiz	Development (*Asynchronous, recorded) Module 3: Somatosensory system
Friday	16-Feb	Lecture	Genetics
Tuesday	20-Feb	Lecture	Neuroplasticity
Thursday	22-Feb	Lecture	Sleep & stress
Friday	23-Feb	Quiz	Module 4: Development/genetics/neuroplasticity/sleep/stress
Tuesday	27-Feb	Lecture	Autonomic nervous system
Thursday	29-Feb	Lecture	Autonomic nervous system (cont.), peripheral nervous system
Friday	1-Mar	Review	Mid-term review (virtual)
☺ Spring Break ☺			

Tuesday	12-Mar	Lecture	Motor systems
Thursday	14-Mar	Lecture	Spinal cord, reflexes
Friday	15-Mar	Review	Motor systems, spinal cord, reflexes
Tuesday	19-Mar	Quiz Lecture	Module 5: Motor systems/spinal cord/reflexes Cerebellum
Thursday	21-Mar	Lecture	Basal ganglia
Friday	22-Mar	Neuromuscular Plasticity Symposium	
Tuesday	26-Mar	Lecture	Movement disorders
Thursday	28-Mar	Quiz Lecture	Module 6: Cerebellum/basal ganglia/movement disorders Cerebrum
Friday	29-Mar	Lecture	Cerebrum
Tuesday	2-Apr	Lecture/lab	Vasculature of the CNS
Thursday	4-Apr	Wet lab (CG-67)	Anatomy, Circle of Willis
Friday	5-Apr	Quiz	Module 7: Cerebrum/Vasculature of the CNS
Tuesday	9-Apr	Lecture	Vestibular system
Thursday	11-Apr	Lecture	Visual system
Friday	12-Apr	Lecture	Guest speaker *pending confirmation, may be scheduled at an alternative time
Tuesday	16-Apr	Lecture/lab	Cranial nerve testing
Thursday	18-Apr	Lecture/lab	Cranial nerve testing (cont.)
Friday	19-Apr	Lecture	Brainstem
Tuesday	23-Apr	Quiz	Module 8: Vision/vestibular/cranial nerves/brainstem
Thursday	25-Apr	 Reading Days 	
Friday	26-Apr		
Saturday	27-Apr	Final Exam - 10 am	

### Course Materials and Technology

#### Required textbook

*Neuroscience Fundamentals for Rehabilitation*. Laurie Lundy-Ekman. 6th Edition. Paperback  
ISBN 97803233792677 (ebook ISBN 9780323792684). Pub Date: 2022

#### Optional textbooks

*An Atlas of Structures, Sections and Systems*. Duane E Haines \*any edition\*

*Netter's Atlas of Neuroscience*. David L. Felten, Ralph F., M.D. Jozefowicz, Frank H., M.D. Netter (Illustrator) \*any edition\*

#### Multimedia

Additional required and/or supplemental readings, videos, weblinks will be posted to Canvas.

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

- [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu)
- (352) 392-HELP - select option 2
- <https://helpdesk.ufl.edu/>

## Additional Academic Resources

[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.

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

[Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).

On-Line Students Complaints: [View the Distance Learning Student Complaint Process](#).

## ACADEMIC REQUIREMENTS AND GRADING

### Assignments

Review activities will be posted in Canvas under “Quizzes”. These activities will not be graded for accuracy- they will be available for you to take multiple times as a way to review material presented in class and self-assess your knowledge. Class time will be used for completion of some, but not all, review activities. It is expected that all review activities will be attempted during your preparation for the module quizzes.

### Grading

Module quizzes (see “Exam Policy” below for more details)

- There will be eight module quizzes. If you take all eight, your lowest module quiz score will be dropped, and your module quiz grade will be based on the remaining seven scores.
- If you miss a quiz for any reason (excused or unexcused absence), your module quiz score will be based on the seven completed quizzes (no dropped quiz grade).
- An optional, extra credit midterm quiz will be given after spring break. It will be worth up to an additional 5% on your final grade.

Review activities

- In order to receive full credit for completion of review activities, no more than one review activity assignment can be left “unattempted”.

Final course grade computation summary:

Module quizzes: 70%

Final exam: 20%

Completion of review activities: 10%

### Point system used

Final grades will be rounded to the nearest whole number and grades awarded as follows:

Percentage Earned	≥ 93	90-92	87-89	83-86	80-82	70-79	60-69	< 60
Letter Grade	A	A-	B+	B	B-	C	D	E

Letter Grade	A	A-	B+	B	B-	C	D	E	WF	I	NG	S-U
Grade Points	4	3.67	3.33	3	2.67	2	1	0	0	0	0	0

More information on UF DPT grading policy may be found at:

<https://pt.php.ufl.edu/wordpress/files/2023/07/DPT-Student-Handbook-Classes-of-2024-2026.pdf>

### Exam Policy

All assessments will be taken in person using Canvas. Both the quizzes and final will include a combination of multiple choice, multiple answer, true/false, matching, categorization, image region identification and short free response questions. Between 10 and 20% of the questions on each quiz will include material covered prior to the current module. You will have one hour to complete each quiz which will consist of approximately 25 questions. The final will be cumulative, addressing all course objectives. You will have two hours to complete the final.

### Policy Related to Make up Exams or Other Work

Review activities are available online to be taken at any time. As noted in the grading section, there will not be any retakes for quizzes missed resulting from unexcused or excused absences. Quizzes will be available only during the designated class period on the schedule. This policy is in place so that quizzes can always be promptly reviewed at the next class, providing adequate time to clarify material from the previous module before taking the next quiz.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the UF Computing help desk (<http://helpdesk.ufl.edu/>) correspondence. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

### Policy Related to Required Class Attendance

Attendance is required and will be recorded with a sign-in sheet at each class. Excused absences must be consistent with program policies in the DPT Student Handbook (<https://pt.php.ufl.edu/wordpress/files/2023/07/DPT-Student-Handbook-Classes-of-2024-2026.pdf>).

## STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

### Expectations Regarding Course Behavior

Mastering core areas of professional behavior is critical for a successful transition from the classroom to the clinical setting. We recognize the importance of these behaviors and have incorporated the development, as well as the evaluation, of these professional behaviors into each academic course.

Core areas of professional development and growth:

- |                         |  |
|-------------------------|--|
| 1. Critical Thinking    | 6. Professionalism                     |
| 2. Communication        | 7. Use of Constructive Feedback        |
| 3. Problem Solving      | 8. Effective Use of Time and Resources |
| 4. Interpersonal Skills | 9. Stress Management                   |
| 5. Responsibility       | 10. Commitment to Learning             |

Professional Behavior is described in the DPT Student Handbook and is exemplified by the following:

1. attendance to classes and labs,
2. timeliness,
3. attentiveness,
4. respectful and polite interaction with peers, instructors, and patients,
5. active learning as demonstrated by questions and discussion,
6. active participation in lab activities,
7. responsibility shown for maintenance, organization, and cleanliness of lab equipment and facilities,
8. leads and/or contributes to lab preparation and clean-up, as requested,
9. appropriate communication with the course instructor when absence from class is unavoidable,
10. appropriate lab and lecture attire,
11. adherence to all university policies,

12. acceptance of self-responsibility e.g., test preparation, seeking of information, seeking assistance when necessary, maintaining professional demeanor, recognizing one's own stressors, et al.,
13. and other attributes as described on Professional Behaviors and Student Responsibilities in the Student manual.

You will receive constructive feedback from instructors for the first observed minor deviation from expected "beginning level" professional behavior (see Professional Development Tool). Repeated deviation from expected behavior will result in the deduction of 1 point from the total class grade and referral to your mentor and Professional Development Committee (PDC) to develop a growth plan to improve behaviors to the expected level. Major/serious deviations from expected behaviors will result in referral to the Dean of Students Office (DSO) and PDC. Major or serious deviations may result in loss of points or letter grade as determined by DSO.

Professional behavior is expected during this course as outlined in the DPT Student Handbook. Minor infractions will be addressed directly with the student either in person or via email. Moderate, major, or severe infractions, as defined in the Student Handbook, will be referred to the Professional Development Committee for further intervention.

### **Communication Guidelines**

Professional behavior extends to communication, both verbal and written. As email will be the preferred form of course communication, additional details regarding "netiquette" can be found at:

<https://teach.ufl.edu/wp-content/uploads/2020/04/NetiquetteGuideforOnlineCourses.docx>

Please sign up to receive notifications from Canvas so that you are aware of new messages and announcements. Students should check their ufl.edu email daily.

### **Academic Integrity**

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at 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 academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida 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 Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>  
<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

### **Recording Within the Course:**

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 educational 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 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 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.

#### **Policy Related to Guests Attending Class:**

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: <https://phhp.ufl.edu/policy-classroom-guests-of-students/>

#### **Online Faculty Course Evaluation Process**

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 can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### **SUPPORT SERVICES**

#### **Accommodations for Students with Disabilities**

If you require classroom accommodation because of a disability, it is strongly recommended you register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class or as soon as you believe you might be eligible for accommodations. The Dean of Students Office will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

#### **Counseling and Student Health**

Students 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 help through 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 and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- **U Matter We Care** website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The **Student Health Care Center** at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical 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 <http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>
- **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.](#)

Do not wait until you reach a crisis to come in and 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 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 & Diversity Affairs website: [www.multicultural.ufl.edu](http://www.multicultural.ufl.edu)