University of Florida
College of Public Health & Health Professions
Syllabus

PHT 6168: Neuroscience for Physical Therapists
4 credit hours
Spring Semester, 2019

Class time and location
Lecture: Monday, Wednesday and Friday: 8:30 – 9:20 HPNP room 1104
Laboratory: Friday, (A) 9:30-11:30, (B) 1:00-3:00
**For some laboratory sessions (see course outline), laboratory groups A and B will meet together from 9:30-11:30, otherwise groups A and B will rotate the early and late sessions on a weekly basis

Course Director
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Additional Faculty Lecturers
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Guest Lecturers
David Clark, ScD
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Mark Bishop, PhD

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Nicole Casagrand Email: nicole.casagrand@ufl.edu
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Course Purpose
The purpose of this course is for first year physical therapy students to learn 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. The course is structured to help students to gain a basic understanding of neuroscience and its relationship to the practice of physical therapy. Clinical examples will be utilized throughout the course to illustrate the relationship between “basic neuroscience” and the clinic. The course has two components:

1. Lectures will provide an overview of the human nervous system. In general, the lectures will follow textbook chapters. Please see the end of the syllabus for a detailed list of lecture topics.
2. During laboratory sessions, students will examine brain models and wet specimens of human brain and spinal cord. Additional laboratory exercises will address clinical aspects of human neuroscience and fundamental properties of neuropsychiatric.
Overall course objectives
Upon successful completion of this course, students should be able to:
1. Describe the structure and function of the healthy/intact nervous system using words and diagrams
2. Apply basic principles of neuroscience in the healthy nervous system to the understanding of nervous system pathophysiology.
3. Use neuroscience terminology appropriately to communicate with colleagues and patients.
4. Compare and contrast potential diagnoses that could be associated with distinct clinical signs and symptoms.
5. Determine and defend a differential diagnosis from patient reports and clinical signs and symptoms.
6. Develop a comprehensive list of signs and symptoms associated with common neurological disorders based on the pathophysiology of each disorder.
7. Compare and contrast potential mechanisms of neuroplasticity underlying current and experimental neurological therapies.

Textbooks
1. REQUIRED
2. OPTIONAL

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 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/ or http://gradschool.ufl.edu/students/introduction.html
Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Policy Related to Class Attendance
Please note all faculty are bound by the UF policy for excused absences. For information regarding the UF Attendance Policy see the Registrar website: https://registrar.ufl.edu/catalogarchive/01-02-catalog/academic_regulations/academic_regulations_013_.htm

LECTURES: The instructor will not monitor attendance for lectures, however the student is responsible for all content covered in each lecture as well as assigned readings. Please do not arrive late for class.
LAB: Attendance is mandatory for ALL lab sessions. Please do not arrive late as quizzes are administered within the first 15 minutes of 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 at the last minute, you must notify the instructor as soon as possible. A physician’s note will be required if the student is unable to test due to illness. Personal issues with respect to exams will be handled on an individual basis.

**Policy Related to Professionalism Expectations**

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. Attendance at all lecture and laboratory sessions
2. Timeliness
3. Attentiveness
4. Respectful and polite interactions with peers, guests, and instructors
5. Active learning, as demonstrated by asking questions and engaging in structured discussions

Furthermore, students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or these web sites for more 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 if they exhibit behavior not in accordance to these standards/expectations.

**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 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 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, Instagram, etc…. – this is a ZERO TOLERANCE RULE. Laptop computers/tablets will be entirely banned from class and lab on the FIRST instance of email, personal internet, or any 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.

**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://oss.ufl.edu/). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.
Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance through the University of Florida resources available to you:

- The University of Florida Counseling Center: 352-392-1575, or Student Mental Health Services, 352-392-1171. Visit their web sites for more information: http://www.counsel.ufl.edu/ or http://www.health.ufl.edu/shcc/smhs/index.htm#urgent
- University of Florida’s 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. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength.
- 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, 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: www.health.ufl.edu/shcc
- 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
- In case of emergency, call 9-1-1.

BUT – 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.

Office hours
Dr. Gonzalez-Rothi: Fridays, 12:00-1:00 or by appointment.
Dr. Mitchell: by appointment

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

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. Lecture exams will primarily consist of multiple choice questions and short written answers and/or diagrams. A laboratory exam will consist of short answer questions based on tagged specimens/models.

Summary of grading
Final course grade will be computed as follows:
Lecture Exam 1: 20%
Lecture Exam 2: 20%
Final Exam: 20%
Laboratory Exam: 20%
Laboratory Activities & Quizzes: 20%
The schedule, 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.

**Grading Scale**

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100%</td>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>90-92%</td>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>87-89%</td>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>83-86%</td>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>80-82%</td>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>70-79%</td>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>60-60%</td>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>&lt; 60%</td>
<td>E</td>
<td>0</td>
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</table>

**Lecture and Laboratory Materials**

PDF files of the lecture slides and laboratory materials will be provided either immediately before or after each class and will be made available on Canvas.

**How to study for this course?**

1. Read assigned readings prior to class.
2. Review the slides from each lecture. Discuss the slides with your classmates.
3. When specific learning objectives have been provided, review them carefully.
4. To best distill knowledge from the lectures, we recommend that you make drawings, diagrams and bullet point outlines. These drawings/outlines will help you organize your notes and integrate knowledge.

**Course evaluations**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at: [https://evaluations.ufl.edu](https://evaluations.ufl.edu). In class time will be set aside within the final two weeks of class to complete these evaluations. These evaluations will be used to make specific improvements to the course, including all assignments, lectures, exam materials and teaching style of instructors. Summary results of these assessments are available to students at [https://evaluations.ufl.edu/results](https://evaluations.ufl.edu/results)
## Topical Outline:

<table>
<thead>
<tr>
<th>Weekday</th>
<th>Date</th>
<th>Activity</th>
<th>Lecture / Lab topic</th>
<th>Exams / Quizzes</th>
<th>Reading assignment</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>7-Jan</td>
<td>Lecture</td>
<td>Introduction to Neuroscience</td>
<td></td>
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<td>Gonzalez-Kothi</td>
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<tr>
<td>Monday</td>
<td>14-Jan</td>
<td>Lecture</td>
<td>Blood Supply and CSF</td>
<td></td>
<td></td>
<td>Gonzalez-Kothi</td>
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<tr>
<td>Wednesday</td>
<td>16-Jan</td>
<td>Lecture</td>
<td>Properties of Cells in Nervous System/Myelin</td>
<td></td>
<td></td>
<td>Mitchell</td>
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<tr>
<td>Friday</td>
<td>11-Jan</td>
<td>Lab Lecture</td>
<td>Introduction to Neuroanatomy Labsurface anatomy</td>
<td></td>
<td></td>
<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Monday</td>
<td>21-Jan</td>
<td>LAB</td>
<td>INTRODUCTION &amp; SURFACE ANATOMY (split)</td>
<td>assignment due</td>
<td></td>
<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Wednesday</td>
<td>26-Jan</td>
<td>Lecture</td>
<td>Somatosensory 2</td>
<td></td>
<td></td>
<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Friday</td>
<td>1-Feb</td>
<td>Lab Lecture</td>
<td>Internal Structures of the Brain and Exam Review</td>
<td></td>
<td></td>
<td>Gonzalez-Roths</td>
</tr>
<tr>
<td>Monday</td>
<td>8-Feb</td>
<td>Lecture</td>
<td>Pain</td>
<td></td>
<td></td>
<td>Bishop</td>
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<tr>
<td>Wednesday</td>
<td>6-Feb</td>
<td>Lecture</td>
<td>Exam 1 Review &amp; Cross-sectional Neuroanatomy</td>
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<td>Gonzales-Kothi</td>
</tr>
<tr>
<td>Friday</td>
<td>8-Feb</td>
<td>Lab Lecture</td>
<td>LECTURE EXAM #1</td>
<td>lecture exam 1</td>
<td></td>
<td>Gonzalez-Kothi</td>
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<tr>
<td>Monday</td>
<td>11-Feb</td>
<td>LAB</td>
<td>HORIZONTAL SECTIONS (split)</td>
<td>quiz</td>
<td></td>
<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Wednesday</td>
<td>13-Feb</td>
<td>Lecture</td>
<td>Motor systems 1</td>
<td></td>
<td></td>
<td>Gonzalez-Kothi</td>
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<tr>
<td>Friday</td>
<td>15-Feb</td>
<td>Lecture</td>
<td>Spinal Cord 1</td>
<td></td>
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<td>Mitchell</td>
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<tr>
<td>Monday</td>
<td>18-Feb</td>
<td>LAB</td>
<td>CORONAL SECTIONS (split)</td>
<td>quiz</td>
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<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Wednesday</td>
<td>20-Feb</td>
<td>Lecture</td>
<td>Spinal Cord 2</td>
<td></td>
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<td>Mitchell</td>
</tr>
<tr>
<td>Friday</td>
<td>22-Feb</td>
<td>Lecture</td>
<td>Autonomic Nervous System</td>
<td></td>
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<td>Gonzalez-Kothi</td>
</tr>
<tr>
<td>Monday</td>
<td>25-Feb</td>
<td>Lecture</td>
<td>Motor Systems - Clinical Applications/Neuroplastic Disorders</td>
<td></td>
<td></td>
<td>Burns/Gonzalez-Kothi</td>
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<tr>
<td>Monday</td>
<td>1-Mar</td>
<td>Lecture</td>
<td>Motor Systems - Clinical Applications/Neuroplastic Disorders</td>
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<td>Burns/Gonzalez-Kothi</td>
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<tr>
<td>Friday</td>
<td>8-Mar</td>
<td>LAB EXAM (split)</td>
<td>lab exam</td>
<td></td>
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<td>Gonzalez-Kothi</td>
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<tr>
<td>Monday</td>
<td>11-Mar</td>
<td>Lecture</td>
<td>Neuroradiology</td>
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<td>Burns/Gonzalez-Kothi</td>
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<tr>
<td>Wednesday</td>
<td>13-Mar</td>
<td>Lecture</td>
<td>Cranial Nerve 1</td>
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<td>Mitchell</td>
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<tr>
<td>Friday</td>
<td>15-Mar</td>
<td>Lecture</td>
<td>Neuromuscular Plasticity Lectures - location TBD</td>
<td>mandatory attendance</td>
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<td>guest speakers</td>
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<tr>
<td>Wednesday</td>
<td>20-Mar</td>
<td>Lecture</td>
<td>Exam 2 Review</td>
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<td>Gonzalez-Kothi</td>
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<tr>
<td>Friday</td>
<td>22-Mar</td>
<td>Lecture</td>
<td>LECTURE EXAM #2</td>
<td>lecture exam 2</td>
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<td>Gonzalez-Roths</td>
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<tr>
<td>Monday</td>
<td>25-Mar</td>
<td>LAB</td>
<td>CRANIAL NERVE TESTING (combined)</td>
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<td>Gonzalez-Roths</td>
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<tr>
<td>Wednesday</td>
<td>27-Mar</td>
<td>Exam 2</td>
<td>Brainstem 1</td>
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<tr>
<td>Friday</td>
<td>29-Mar</td>
<td>Lecture</td>
<td>Peripheral Nervous System 1</td>
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<td>Gonzalez-Roths</td>
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<tr>
<td>Monday</td>
<td>1-Apr</td>
<td>LAB</td>
<td>CNS CLINICAL CASES (combined)</td>
<td>assignment due</td>
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<td>Gonzalez-Kothi</td>
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<tr>
<td>Wednesday</td>
<td>3-Apr</td>
<td>Lecture</td>
<td>Peripheral Nervous System 2</td>
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<tr>
<td>Friday</td>
<td>5-Apr</td>
<td>Lecture</td>
<td>Cerebellum 1</td>
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<tr>
<td>Monday</td>
<td>8-Apr</td>
<td>Lecture</td>
<td>Vision</td>
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<td>Sluder-Byrne</td>
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<tr>
<td>Wednesday</td>
<td>10-Apr</td>
<td>Lecture</td>
<td>Vestibular</td>
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<td>Sluder-Byrne</td>
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<tr>
<td>Friday</td>
<td>12-Apr</td>
<td>Lecture</td>
<td>Neuroplasticity</td>
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<td>Lundy-Ekman Ch. 4</td>
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<tr>
<td>Monday</td>
<td>15-Apr</td>
<td>Lecture</td>
<td>Neuroplasticity</td>
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<tr>
<td>Wednesday</td>
<td>17-Apr</td>
<td>Lecture</td>
<td>Stress</td>
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<tr>
<td>Friday</td>
<td>19-Apr</td>
<td>Lecture</td>
<td>Stress</td>
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<tr>
<td>Monday</td>
<td>22-Apr</td>
<td>LAB</td>
<td>FINAL EXAM REVIEW (combined)</td>
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<td>Gonzalez-Kothi</td>
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<tr>
<td>Monday</td>
<td>26-Apr</td>
<td>Lecture</td>
<td>Reading Days - can schedule optional review if needed</td>
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<td>Gonzalez-Roths</td>
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**EXAM Week: April 27-May 3**

**FINAL EXAM PART 1**

**FINAL EXAM PART 2**