

PT 610: NEUROSCIENCE FOR CLINICAL PRACTICE II

Course Description: Human neuroanatomy and neurophysiology with emphasis on motor theory and the sensory and motor systems involved in the acquisition and control of movement. Discussion of normal functions as well as the clinical signs and symptoms of pathological lesions affecting the nervous system. Applicable health conditions, impairments, and activity limitations of the nervous system relevant to current practice are introduced.

Department Offering the Course:

Physical Therapy

Credit Hours: 3 credit hours

Instructor(s):

David Relling PT, PhD and Cindy Flom-Meland, PT, MPT, PhD, NCS

Clock Hours:

Lecture: 48 lecture/Discussion Hours

Course Prerequisites:

Registered in Professional Physical Therapy curriculum

GOALS AND OBJECTIVES

After the completion of this course, the student will be able to:

1. Describe the clinical decision-making (CDM) process and identify the major responsibilities of the physical therapist.
2. Discuss the models of enablement and be able to apply them to clinical situations.
3. Discuss various theories behind the neuromuscular basis of controlled, coordinated activity
4. Examine adult clients for basic motor control impairments and functional deficits.
 - a. Contrast Traditional Models and Task-oriented Model of Neurological Assessment.
 - b. Identify the purposes and components of the examination of motor function, including but not limited to the following impairments:
 - Muscle weakness
 - Abnormal tone/reflexes
 - Sensory and perceptual dysfunction
 - Incoordination
 - Balance dysfunction.
 - c. Analyze the use of standardized scales for functional assessment.

5. Design a comprehensive physical therapy program for orthopedic and neurological clients throughout the continuum of care, integrating current and previous coursework, through the use of case studies/scenarios.
6. Demonstrate recognition of the importance of collaboration and education with patients, families, those individuals responsible for the patient, and colleagues in the design and implementation of treatment programming.
7. Evaluate published studies related to motor control and learning and to physical therapy practice.
8. Understand the implications of individual and cultural differences as related to physical therapy practice.
9. Demonstrate professional behavior and appropriate communication in all interactions with patients/clients, families, and other healthcare workers.
10. Recognize the importance of health maintenance and promotion and prevention of disease and disability and identify the health needs of individuals through screening, prevention, and/or wellness programs in the community.
11. Describe the major auditory, vestibular, olfactory, and taste pathways, and discuss the physical signs and symptoms associated with pathologies of those systems.
 - a. Identify and describe the major auditory, vestibular, olfactory, and taste pathways.
 - b. Describe the vestibule-ocular reflex.
 - c. Describe the pathophysiology of benign positional vertigo.
12. Discuss the concept of pain modulation and the theories which attempt to explain the modulation of pain.
 - a. Differentiate between the gate control theory and the opiate theory of pain modulation.
 - b. Differentiate between the actions of enkephalins and endorphins.
 - c. Describe the effects of central sensitization.

GRADING SCALE: A (90 – 100%)
 B (80 – 89.9%)
 C (76 – 79.9%)

Grades are based on written examinations and quizzes.

Academic Integrity:

In accordance with the rules concerning scholastic dishonesty in the Code of Student Life* at the University of North Dakota, I affirm that I understand these rules and I agree to comply with them.

I will not:

- a) receive any additional information or assistance for any exam other than what was provided during class or approved tutor sessions
- b) copy from another student's test
- c) collaborate with or seek aid from another student who may have previously taken the exam
- d) knowingly use, buy, sell, steal, or solicit in whole or in part the contents of any exam
- e) bribe another person to obtain information about any exam

Department of Physical Therapy Honor Code Pledge:

"Upon my honor as a professional student in the physical therapy program at the University of North Dakota, I pledge that I will not give nor receive unauthorized aid on written examinations, laboratory practical examinations, written assignments, take home assignments or clinical assignments"

Examination disclaimer: "I affirm that I have adhered to the Honor Code in this assignment"

A. Forms of Academic Dishonesty. Academic dishonesty includes, but is not limited to:

1. Copying or distributing examination items
2. During testing, using crib notes or various forms of technology not authorized by faculty
3. Copying another student's written paper or examination, with or without their knowledge
4. Helping someone else cheat on a test
5. Communicating or collaborating during a test by electronic means such as instant messaging, telephone, texting, smart watches, or social media.
6. Discussing test items or answers (written or laboratory) with students who have not yet taken the examination
7. Cutting and pasting text from any source without giving proper citation to that source
8. Plagiarism of any materials
9. Fabricating or falsifying written materials
10. Falsely reporting information or actions in clinical or classroom laboratories
11. Submitting the same paper, or a substantially similar paper, for the requirements of more than one course without the approval of the instructor(s) concerned
12. Submitting term papers or assignments written by another person
13. Consenting to having one's work used by another student as his or her own
14. Collaborating on a project (in person or via electronic means) when the instructor asked for individual work
15. Using a false excuse to obtain an extension on a due date or delay an examination
16. Depriving other students of necessary course materials by stealing books, periodicals, or other materials from libraries, AV centers, etc.

If problems occur, students are required to work through channels of communication to resolve the problem before going to the chair or dean. The channel is student, instructor, chair, associate dean health sciences, and dean. rev 2/06, 5/06, 5/07, 4/08, 5/09, 5/10, 5/11, 8/13, 8/14, 8/15, 8/16, 8/19

Notice of Nondiscrimination

It is the policy of the University of North Dakota that no person shall be discriminated against because of race, religion, age, color, gender, disability, national origin, creed, sexual orientation, gender identity, genetic information, marital status, veteran's status, or political belief or affiliation and the equal opportunity and access to facilities shall be available to all. Concerns regarding Title IX, Title VI, Title VII, ADA, and Section 504 may be addressed to Donna Smith, Director of Equal Employment Opportunity/Affirmative Action and Title IX Coordinator, 401 Twamley Hall, 701.777.4171, UND.EO.TitleIX@UND.edu or the Office for Civil Rights, U.S. Dept. of Education, 500 West Madison, Suite 1475, Chicago, IL 60611 or any other federal agency.

Disability Access Statement

Contact your course instructor to request disability accommodations, discuss medical information, or plan for an [emergency evacuation](#).

To get confidential guidance and support for disability accommodation requests, students are expected to register with DSS at [Disability Services](#), 280 McCannel Hall, or 701.777.2664.

Reporting Sexual Violence

If you or a friend has experienced sexual violence, such as sexual assault, domestic violence, dating violence or stalking, or sex-based harassment, please contact UND's Title IX Coordinator, Donna Smith, for assistance: 701.777.4171; donna.smith@UND.edu or go to [Title IX](#).

Faculty Reporting Obligations Regarding Sexual Violence

It is important for students to understand that faculty are required to share with UND's Title IX Coordinator any incidents of sexual violence they become aware of, even if those incidents occurred in the past or are disclosed as part of a class assignment. This does not mean an investigation will occur if the student does not want that, but it does allow UND to provide resources to help the student continue to be successful at UND. If you have been the victim of sexual violence, you can find information about confidential support services at [Title IX](#).

Ensure Accessibility

To comply with the latest accessibility guidelines, documents posted online, including, but not limited to, Adobe PDF files, Microsoft Word documents, Microsoft PowerPoint presentations, and online flipbooks, must be screen-reader friendly.

For directions on how to make your syllabus and other course materials accessible, go to Blackboard > Services > Atomic Learning > Creating an Accessible Syllabus (for technical assistance with Atomic Learning, contact UND Tech Support at [UND Tech Support](#)).

UND is committed to maintaining a safe learning environment while providing quality learning experiences for our students. COVID-19's continued presence within our UND community may necessitate changes in classroom management as the academic year progresses. As such, UND asks students and instructors to be flexible when necessary to promote a safe environment for learning. Please do not attend an in-person class or lab if you are feeling ill, particularly if you are experiencing symptoms of COVID-19, or if you have been directed by health professionals to quarantine or isolate. If you are not able to attend class or lab, please notify your instructor as soon as possible and discuss options for making up any missed work in order to ensure your ability to succeed in the course. If you will have an extended absence due to serious illness or other uncontrollable circumstances, you may request an absence notification through the [Office of Student Rights and Responsibilities](#). Similarly, if your instructor is ill they may need to cancel class or temporarily move your course to online delivery to ensure that you are able to complete the course successfully. Instructors may require students to wear masks in the classroom or in the laboratory as a preventative measure designed to facilitate uninterrupted classroom engagement and to facilitate health and safety in the classroom. If your instructor does require masks in class or in a laboratory, you are expected to comply with that request.

UND also strongly encourages all members of the University community, including students, to get vaccinated, seek out testing when needed, and model positive behavior both on- and off-campus to foster a healthy and safe learning environment for all students. Individuals who would like to discuss disability accommodations regarding masks should contact the Disability Services for Students (DSS) office at 701-777-2664 or UND.dss@UND.edu. Individuals who are unable to wear a mask due to a sincerely held religious belief should contact the UND Equal Opportunity and Title IX Office at 701.777.4171 or UND.EO.TitleIX@UND.edu.

PT 610: Neuroscience for Clinical Practice II
 Instructors: David Relling PT, PhD and Cindy Flom-Meland, PT, MPT, PhD, NCS
 Monday, Wednesday, and Friday 8:00 to 9:00 am

DATE	TOPIC	
PT 610: Neuroscience for Clinical Practice II		
Spring Semester, 2023		
Monday, Wednesday, and Friday (if needed) 8:00 to 9:00 am		
JANUARY		
11	No Class – reserved for PT 605	
13	No Class – reserved for PT 605	
16	No Class – Martin Luther King Jr. Day	
18	Clinical Decision-Making	Cindy
20	Reserved for PT 605	
23	Clinical Decision-Making	Cindy
25	Clinical Decision-Making	Cindy
27	Reserved for PT 605	
30	Perceptual Dysfunction	Cindy
FEBRUARY		
1	Cognitive Dysfunction	Cindy
3	Reserved for PT 605	
6	Cognitive Dysfunction	Cindy
8	Cognitive Dysfunction	Cindy
10	Reserved for PT 605	
13	Quiz	
15	Weakness/Abnormal Tone	Cindy
17	Reserved for PT 605	
20	No Class – President’s Holiday	
22	Weakness/Abnormal Tone	Cindy
24	Reserved for PT 605	
27	Incoordination	Cindy
MARCH		
1	Incoordination	Cindy
3	Reserved for PT 605	
6	Mid-term Exam Week	
8	Mid-term Exam Week	
10	Mid-term Exam Week	
13	Spring Break	
15	Spring Break	
17	Spring Break	
20	Vestibular System Physiology	Dave
22	Reserved for PT 605	
24	Reserved for PT 605	
27	Reserved for PT 605	
29	Balance System	Meridee

	31	Reserved for PT 605	
APRIL			
	3	Balance System	Meridee
	5	Balance System	Meridee
	7	No Class - Good Friday	
	10	No Class - Easter Break	
	12	Pain Pathways / Modulation	Dave
	14	Pain Pathways / Modulation	Dave
	17	Pain (Pain Neuroscience Concepts)	Dave
	19	Pain (Pain Neuroscience Concepts)	Dave
	21	Pain (Pain Neuroscience Concepts)	Dave
	24	Pain (Pain Neuroscience Concepts)	Dave
	26	Clinical Applications – Pain	Dave
	28	Clinical Applications – Pain	Dave
MAY			
	1	Final Exam	
	3	Reserved for PT 605	
	5	Reserved for PT 605	