

DPT 756 - Neurophysiology

Credit Hours	3
Course Location	BHS 130
Weekly Schedule	Mondays – 8:00 am to 10:50 am
Instructor	Merrill Landers, PT, DPT, PhD Office hours: Fridays, 8:00am to 12:00pm (please go to Landers.youcanbook.me to schedule an appointment only during those office hours) Telephone: 702-895-1377 Email: merrill.landiers@unlv.edu

Course Description

High level immersion into the function of the human central and peripheral nervous systems based on current research and theory. Topics will include normal human motor and sensory neurophysiology, cognitive and learning neurophysiology, neuropathophysiology, neuroplasticity, neurodiagnostics and neurologic treatment options.

Course Objectives

At the completion of the course the student will be able to:

1. Detail neurobiological principles underlying the functioning of the nervous system.
2. Describe the relationships of genetics and environment on nervous system function, development and plasticity.
3. Discuss sensory, motor, and associative functioning of the nervous system.
4. Explain the neuroscience of pain, headache, placebo and nocebo.
5. Describe the neuroscience of neuroprotection and neuroplasticity of the nervous system.
6. Explain the neurobiology of exercise.
7. Detail the role of the nervous system in the function of locomotion and balance.
8. Discuss the neurobiology of extra-pyramidal motor control.
9. Describe the neuropathology of the most common neurologic pathologies (e.g., Parkinson's disease and other movement disorders, Alzheimer's disease, cerebrovascular disease, and multiple sclerosis).
10. Critically evaluate the neuroscience research literature related to physical therapy practice.

Course Structure:

The major component of the course will be a series of lectures. Students will gain an understanding of the effects of electrical and chemical neurotransmission on plasticity and recovery of function. Students will also gain an understanding of the neurophysiological impact on reflexes, sensation, and movement. Presentations and discussions will be conducted concerning the most current research on selected topics. This course has been designed in accordance with the Normative Model of Physical Therapist Professional Education: Version 2004 (APTA) and also with the 2011 APTA Neurology Section's Neurologic Entry-Level Curricular Content.

Evaluation Methods

Testing

a. Written Exams

- a. There will be 3 exams and a final comprehensive examination.
 - i. There will be a combination of multiple choice, true or false, and short answer.
- b. All tests will be comprehensive over the most recent material presented since the last exam.
- c. Each student is expected to take all of the exams.
- d. If any student does not or is unable to take an exam or do the presentation due to an emergency, then plans must be made at the discretion of the professor to complete all coursework within a specified time period.
 - i. An unexcused absence resulting in taking the test late will result in an automatic 10% deduction on the test.
- e. Each test is timed and will be taken on Examssoft.
- f. You have one week after the exam to review it.
- g. Extra credit: There may be extra credit questions throughout the semester from the previous lectures or readings that will count up to 2% of the total points on each of the tests.

Grading

The final course grade is a letter grade. The course grade will be based on the following:

Exams	= 300 (3x100)
Assignment (a)	= 45 (3x15)
Assignment (b)	= 45 (3x15)
<u>Final</u>	<u>= 100 (comprehensive)</u>
Total	= 490 total points

Numeric and letter grade translation (no rounding)

A	93-100%	B-	80-82%
A-	90-92%	C+	77-79%
B+	87-89%	C	73-76%
B	83-86%	F	<73%

Instructional Practices

Teaching Methods

- a. Recorded lectures, as needed
- b. In-person lectures and discussions
- c. Student-engagement activities/ small group discussions
- d. Class-based problem solving with case studies
- e. Student self-study

Teaching Aids

- a. WebCampus platform
- b. Powerpoint
- c. Videos
- d. Zoom/Panopto
- e. Supplemental materials (PDFs, websites, journal articles)

Student Responsibilities

- a. Prepare for the lecture and discussion sessions by reading the required materials prior to the session.
- b. Active participation in all sessions.
- c. Have access during lecture to the lecture notes from WebCampus.
- d. Any student having particular difficulty with material presented in this course should seek direction and/or assistance from the professor as soon as the difficulty is perceived.
- e. Each student is expected to act according to the guidelines of professional abilities set forth in the Department of Physical Therapy Policy and Procedure Manual.

Required Resources

- a. Webcam
- b. Computer
- c. Headphones/ microphone/ speaker
- d. Alternate source (phone) to video while taking high stake tests (if necessary)

Required Text

Kandel ER, Schwartz JH, Jessel TM, Siegelbaum SA, Hudspeth AJ. Principles of Neural Science. 5th Edition. McGraw-Hill: 2013. ISBN: 978-0-07-139011-8

Recommended Text

Schenkman ML, Bowman JP, Gisbert RL, Butler RB. Clinical Neuroscience for Rehabilitation. Pearson Education, Inc: 2013. ISBN: 978-0-13-302469-2

University policies

Public Health Directives

[Face coverings are currently mandatory for all faculty and students in the classroom.](https://www.unlv.edu/coronavirus/health-requirements) Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at [Health Requirements for Returning to Campus](https://www.unlv.edu/coronavirus/health-requirements), <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Student Conduct Code](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the

instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Incomplete Grades

The grade of "I" (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student's control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of "F" will be recorded, and the student's GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the "I" grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries' Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=) webpage, <https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. Sending emails within WebCampus-Canvas is also acceptable.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.