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Spring 1-2003

### PT 536.01: Neuroscience

Charles T. Leonard

*Univeristy of Montana - Missoula*

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**PT 536 NEUROSCIENCE**  
**Spring Semester 2003, 5 credits**

Instructor:

Chuck Leonard, Ph.D., P.T.  
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[leonard@selway.umt.edu](mailto:leonard@selway.umt.edu)

Class hours: 10:10-12:00 Tue., Wed. and Fri. in SB 113 (Lab in SB 020 and 050 as needed)

Required Textbooks:

1. Nolte, The Human Brain, An Introduction to Its Functional Anatomy, 5<sup>th</sup> edition, Mosby, 2002.
2. Leonard, The Neuroscience of Human Movement, Mosby, 1998.

Additional References:

Faculty Packet  
Lab Materials  
Handouts  
Other recommended reading

Evaluation of Student Performance:

Classroom attendance is voluntary. Students are responsible for all material covered in lectures and laboratory/study group activities. Assigned textbook readings are meant to assist the student in their comprehension of course material. The student's grade will be based on four examinations. The first and third examinations (50 points each) will be one hour long and include only written portions. The second (midterm) and fourth (final) examinations (100 points each) will be two hours long and include written and photographic slide practical sections. The midterm and final examinations will be comprehensive, covering all the material presented in the course to that point. Course grades will be determined as follows: A = 90-100%, B = 80-89%, C = 70-79%. Attainment of a test score of less than 70% will require the student to retake the examination. If the student does not obtain a 70% or greater on the retake examination, they will fail the entire course and have to retake the course the next time it is offered.

Laboratory Activities: Students will need to provide their own examination gloves and white lab coat for participation in activities using cadaver material.

### **Course Schedule:**

1/28 Tue.

10:10 Introduction; Nolte 1-36, Leonard 1-20

11:10 Superficial features of the brain; Nolte 53-66

1/29 Wed.

10:10 Lab:

11:10 Lab continued

1/31 Fri.

10:10 Nervous system development; Nolte 37-52, Leonard 124-128

Disorders of neuroembryonic development

2/4 Tue.

10:10 Blood supply of the brain and spinal cord; Nolte 119-146, 255-257

11:10 Review meningeal coverings, ventricles and CSF, meningitis/encephalitis;  
Nolte 79-97, 98-117.

2/5 Wed.

10:10 Lab: Meninges, ventricles and arteries

11:10 Lab continued

2/7 Fri.

10:10 Histology and organization of cerebral cortex; Leonard 102-133

11:00 Neural response to damage

2/11 Tue.

10:10 Cerebral vascular disease

11:10 Support cells

2/12 Wed

10:10 Anatomy of the spinal cord; Nolte Chapter 10

11:10

2/14 Fri.

10:10 Neurophysiology

11:10 Neurotransmission, Multiple sclerosis, Guillain Barre Syndrome;

2/18 Tue.

10:10 Receptor physiology and Neuromuscular pathology

11:10 GTO and muscle spindles; Nolte 210-214, Leonard 20-30

2/19 Wed.

10:10 Lab: Sensory systems; Nolte Chapter 9

11:10 Lab continued

2/21 Fri.

10:10 Sensory systems continued (pathways)

11:10 Review

2/25 Tue.

10:10 **Examination 1**

2/26 Wed.

10:10 Lab: Neurological evaluation – reflex testing

11:10 Lab continued

2/28 Fri

10:10 Spinal cord clinical questions

3/4 Tue

10:10 Autonomic nervous system

11:10 Limbic system

3/5 Wed

10:10 Study groups – peripheral and spinal cord lesions

11:10 Study groups continued

3/7 Fri

10:10 Brainstem

3/11 Tue

10:10 Brainstem

3/12 Wed

10:10 Cranial nerves

3/14 Fri

10:10 Cranial nerves

3/18 Tue

10:10 Review

3/19 Wed

10:10 **Midterm**

3/21 Fri

No Class (Reading day)

### **3/22-31/02 Spring Break**

4/1 Tue

10:10 Visual pathways

11:10 Visual deficits; Nolte 511-524

4/2 Wed

10:10 Lab: Neurological evaluation – cranial nerve testing

11:10 Lab continued

4/4 Fri

10:10 Vestibular system

4/8 Tue

10:10 Vestibular deficits and testing

4/9 Wed

10:10 Basal ganglia

11:10 Parkinson, dystonia, Huntington diseases, pharmacology

4/11 Fri

10:10 Videotape: Common movement disorders

11:10 Videotape continued

- 4/15 Tue  
10:10 Cerebellar anatomy; Nolte 486-509, Leonard 49-58  
11:10 Cerebellar function
- 4/16 Wed  
10:10 Cerebellum  
11:10
- 4/18 Fri  
10:10 Cerebellar dysfunction  
11:10 Diencephalon; Nolte 386-409, Leonard 59-63
- 4/22 Tue  
10:10 **Examination 3**  
11:10 Diencephalon continued
- 4/23 Wed  
10:10 Lab: Neurological evaluation – motor function and functional activities  
11:10 Lab continued
- 4/25 Fri  
10:10 Cerebrum; Nolte 525-555, Leonard 63-65  
11:10 Cerebrum continued
- 4/29 Tue  
10:10 Role of cerebral cortex in movement; Leonard 102-139  
11:10 The neuroscience of motor learning; Leonard 203-226
- 4/30 Wed  
10:10 Lab: Neurological evaluation – Case studies  
11:10 Lab continued (Brain scans) Leonard 104-109
- 5/2 Fri  
10:10 Reading day
- 5/6 Tue  
10:10 Motor systems  
11:10 Motor systems
- 5/7 Wed  
10:10 Neural control of human locomotion; Leonard 146-175
- 5/9 Fri  
10:10 Review and reading day

**Final examination: Finals Week**