

## SYLLABUS

QUARTER :	Spring 2009
NAME OF COURSE:	Neuromuscular Physiopathology II (PhPa - 212)
LENGTH OF COURSE:	55 hours (5 hours lecture/week)
COURSE DESCRIPTION:	<p>This course examines a number of nervous system functions and the pathologies that affect them. The mechanisms by which the nervous system controls sensory and motor processes, vision and autonomic function will be explored along with pathologies that affect these functions.</p> <p>This course includes approximately 20 hours of physiology and 35 hours of pathology.</p>
PREREQUISITES:	NMPhPa I (PhPa 131), Systemic Physiology (PHYS 121), CNS (ANAT 137), PNS (ANAT 114)
COURSE OFFERED BY:	Dept of Physiology/Pathology Suzanne L. Ray, MS, chair
COURSE INSTRUCTOR:	<a href="#">Norman Strutin, BA, DC, DACNB</a>
OFFICE HOURS:	Appointment preferred (Rm 131) Tu. 10:50-11:40, Wed. 11:50-1:50, Th. 10:50-11:40 Voice mail: 780-4599 ext 2130, Email: nstrutin@lifewest.edu
REQUIRED TEXTS:	Strutin N. <u>NMPhPa 2 course notes</u>
RECOMMENDED TEXTS:	Blumenfeld H. <u>Neuroanatomy through Clinical Cases</u> . 2002 Kierman JA. <u>Barr's The Human Nervous System</u> . 8 <sup>th</sup> ed., 2005 Nolte J. <u>The Human Brain</u> . 5 <sup>th</sup> ed, 2002 Snell R., Westmoreland B. <u>Clinical Neuroanatomy for Medical Students</u> . 5 <sup>th</sup> ed., 2001 Waxman S. <u>Clinical Neuroanatomy</u> . 25 <sup>th</sup> ed., 2003 Cramer G., Darby S. <u>Basic Clinical Anatomy of the Spine, Spinal Cord and ANS</u> , 2 <sup>nd</sup> ed., 2005
REFERENCE TEXTS:	Kandel ER. <u>Principles of Neural Science</u> . 5 <sup>th</sup> ed, 2006
MATERIALS:	none
METHOD OF INSTRUCTION:	lecture, discussion

EVALUATION:	MT 1:	25%
	MT 2:	25%
	Final ( <b>comprehensive</b> ):	50%
	Assignments	pass/fail

Exam questions may be drawn from the following formats (in any combination or proportion):

- \* multiple – choice, T/F,
- \* fill in the blank, short answer
- \* short answer/written

Quarter grades will be assigned according to the following percentage ranges:

A	Superior Work	90-100%
B	Above Average Work	80-89%
C	Average Work	70-79%
D	Poor -	The student must REPEAT the course
F	Failure -	The student must REPEAT the course
I	Incomplete -	The Student has failed to take all required exams and/or has failed to turn in other required work.
0	Overcut -	The Student has accumulated more than 10% absence in the course.

**EXTRA CREDIT: There will be no extra credit work permitted in this class.**

**INDEPENDENT STUDENT WORK:**

All exams must be the product of the individual student's original efforts for this class. Collaboration on other class assignments is permitted as defined by the instructor.

**REQUEST FOR TESTING ACCOMODATIONS**

The student must notify the instructor of any authorized testing accommodations at least one week prior to the exam. Once arrangements have been made, they can not be changed without approval from the instructor and the office of student services.

The student must notify the instructor of any schedule conflicts during final exam week at least one week prior to the beginning of final exams. Appropriate paperwork must be completed and submitted to the office of student services. Once arrangements have been made, they can not be changed without approval from the instructor and the office of instruction.

**PROCEDURES FOR REVIEWING EXAMS:**

The instructor had not authorized distribution of old exams. Any possession of old exams is prohibited. The instructor may either conduct review sessions in class or may meet with a student to review his or her exam during office hours **for two weeks following the exam (unless there is a shorter time period until the last scheduled office hour during the last week of classes.)** Students may not review mid-term exams during final exam week. The possession of any exam other than during a review session constitutes unprofessional conduct.

#### MAKE-UP EXAMS:

Students are expected to take all examinations at the scheduled time, and complete assignments as scheduled.

Students who have missed an exam due to documented emergency or other excusable reason must pick up a "Request for Alternate Testing" form in the Dean's Office. **At that time, they will explain the circumstances of their emergency and provide documentation to the Dean of the College. If the Dean authorized the exam,** the student must then present the form to his/her instructor to complete the necessary information. The student must then take the completed and signed request to the Student Services Office to schedule a time for the exam to be proctored. As indicated near the top of the form, Student Services requires a minimum of 5 working days to set up and schedule the approved exam.

Documented emergencies include hospitalization, accidents, or death in the family. **Undocumented illness, not "feeling well", weddings, events, extended vacations or school holidays, non-school scheduled seminars, etc., are not excusable reasons for making-i[ an exam or assignment.**

#### ATTENDANCE:

Instructors will record student attendance. Roll can be taken at any time during the class period. The instructor may call names, pass a roll sheet, use submitted classroom assignments, or observe the students. If the instructor calls roll, a student is not present when his or her name is called, is absent. If the instructor uses a roll sheet, students have 15 minutes to sign in.

**If a student arrives after attendance has been taken but within the first 15 minutes of the class session, the student must see the instructor at the end of the class hour to request that his or her absence be changed to a tardy. Three incidents of tardy attendance constitutes one hour of absence.** Failure to notify the instructor will result in the absence mark remaining on the attendance sheet. This can not be changed later. **No additional assignments can be used to compensate for absences except as outline in the college course overlap policy.**

If a student leaves after attendance has been taken, the instructor can change the attendance record to indicate an absence for the class period. Any request to leave class

early must be approved by the instructor before the class session.

**A student who missed more than 10% of the class hours will be over-cut from the class. If the student presents documentation to the dean verifying unanticipated mitigating circumstances that prevented attendance for 15% of the class hours, the dean may permit him or her to continue attending a class, the dean will consider the student's overall attendance record and academic standing. Under no circumstances, regardless of any personal situation, will a student who misses 20% of the class hours receive course credit.**

A student is responsible for keeping track of his or her own attendance and absences. Instructors may, but are not required, to provide courtesy notices indicating that a student is approaching or has reached over-cut status.

INCOMPLETES: college policy applies, plus see “MAKE-UP EXAMS” above

#### CONDUCT AND RESPONSIBILITIES:

It is the student's responsibility to maintain professional standards of behavior and attire while on campus. Students are expected to be prepared for instructional activities. They must bring required supplies/equipment and dress appropriately in accordance with the instructor's directions. Failure to do so can result in the student being marked absent for the class session. Any disruptive activity (e.g. use of cell phones, side conversations) in the classroom is prohibited. If the instructor requires a disruptive student to leave the classroom the student remains responsible for all information and will be marked absent for the class session. The dean will impose sanctions for unprofessional behavior. Any form of deceit, fraud, plagiarism, unauthorized collaboration, or theft will result in failure of the course and referral to the dean for disciplinary sanctions.

#### COURSE OBJECTIVES:

Upon completion of the course the student will have a thorough understanding of the organization and function of the nervous system. Pathologies of the somatosensory system, motor system, ocular motor - visual systems, and autonomic visceral motor system will be considered. The student will be able to localize a neurologic lesion.

#### COURSE OUTLINE:

## A. Introduction

Principles of neurologic diagnosis, radiculopathy, dermatomes, sclerogenic referred pain

Reading assignment/supportive reading:

1. NMPaPa notes, Chapter I
2. Neuroanatomy through Clinical Cases, Blumenfeld
  - a. nerve roots in relation to vertebra, and discs: 305-306
  - b. dermatomes: 307-308
  - c. radiculopathy: 315-316

## B. Neuroanatomy review - by level

1. Cerebral hemispheres: functions of lobes, language
2. Diencephalon
  - a. thalamus
  - b. hypothalamus
3. Brainstem and cranial nerves
4. Spinal cord (ascending and descending tracts)
5. circulation of the nervous system

Reading assignment/supportive reading

1. course notes, chapter II
2. Neuroanatomy through Clinical Cases, Chapter 2

Thalamus (Neuroanatomy through Clinical Cases, 271-276)

Hypothalamus (Neuroanatomy through Clinical Cases, Chapter 17)

## C. Somatosensory system

1. Review the anatomy and physiology of the somatosensory system
  - a. Tactile system
  - b. Nociceptive system
  
2. Discussion of common lesions affecting the somatosensory system and their clinical manifestations
  - a. peripheral nerves
  - b. spinal nerves
  - c. spinal cord
  - d. brainstem, cranial nerves
  - e. thalamus
  - f. cortex
  
3. Pain modulation mechanisms

Somatosensory system  
reading assignments/supportive reading

**NMPhPa 2 notes:** chapter III

**Neuroanatomy through Clinical Cases, Blumenfeld:**

Chapter 7, Somatosensory Pathways

Chapter 3, Neuroanatomy Overview

34-35: ascending tracts

28-29: somatosensory cortex & homunculus

Chapter 8, Spinal Nerves

305-307: spinal nerve – disc anatomic relationships

307-308: dermatomes

315-316: radiculopathy

317: herpes zoster (shingles)

318: cauda equina syndrome – “saddle anesthesia”

319-335: clinical cases

Chapter 9, Plexuses & Peripheral Nerves

342, 343 (table 9.1), 345 (table 9.3): peripheral nerve sensory areas

346-249: common plexus & nerve syndromes  
351-363: clinical cases

#### Chapter 14, Brainstem III

586-587: long tracts  
614 (table 14.7), 615: dorsolateral medullary (Wallenberg) syndrome  
620-621: clinical case 14.1

#### Chapter 10, Cerebral Hemispheres and Vascular Supply

371-372, 375, 376-378: vascular supply to the somatosensory cortex

### **Barr's The Human Nervous System, Kiernan:**

#### Chapter 17, General Sensory Systems (317-336)

#### Chapter 3, PNS:

40-45: receptors/sensory endings  
47-48: dorsal root ganglia, Herpes Zoster

#### Chapter 5, Spinal Cord:

81: dermatomes  
72-74: dorsal horns  
73-78: ascending tracts  
83: syringomyelia

#### Chapter 7, Brainstem:

9-101: ascending tracts  
116: Wallenberg syndrome

#### Chapter 15, Cortex:

256-259: somatosensory cortex  
259: parietal lobe lesions – “agnosia”

### D. The motor system

1. Review the anatomy and physiology of the voluntary motor system

2. Discussion of common lesions affecting the motor system and their clinical manifestations
  - a. peripheral nerve
  - b. spinal nerve
  - c. spinal cord
  - d. brainstem, cranial nerves
  - e. cerebellum
  - f. basal ganglia
  - g. motor cortex

MOTOR SYSTEM - reading assignments/supportive reading

**NMPhPa 2 notes:** Chapter IV

**Neuroanatomy through Clinical Cases, Blumenfeld:**

Chapter 6, Corticospinal tract and other motor pathways

Chapter 2, Neuroanatomy Overview:

28-29: motor cortex and homunculus

32-33: main motor pathways

34: cerebellum and basal ganglia

Chapter 8, Spinal nerve roots

305-306: spinal nerve – disc anatomic relationships

307-311: myotomes

315-318: radiculopathy

Chapter 9, Major plexuses and peripheral nerves

Chapter 15, Cerebellum

Chapter 16, Basal Ganglia

**Barr's, The Human Nervous System, Kiernan:**

Chapter 23, Motor systems

Chapter 3, PNS: 45-51

Chapter 5, Spinal cord:

Ventral horn: 74-75  
Descending tracts: 75-79  
Spinal reflexes: 79-80  
Clinical notes: 81-83

Chapter 7, Brain Stem: Nuclei and tracts

Descending tracts (medulla): 101-102  
Pontocerebellar tract: 108-109  
Red nucleus and associated tracts: 112  
Substantia nigra: 113  
Clinical note – Parkinson's disease: 113-114

Chapter 15: Functional Localization in the Cerebral Cortex

Motor cortex, 264-267

Chapter 10, Cerebellum

Chapter 12, Corpus Striatum