

## **Northwest Arkansas Community College Health Professions Division: Physical Therapy Program Course Outline**

### **Course Number and Title**

PHTA 2391 & 2392 Neurophysiology and Neurophysiology Lab

### **Catalog Description**

PHTA 2391-This course is designed to provide the PTA student with a strong understanding of the pathophysiology and clinical manifestations for lesions of the PNS and CNS, and the skills to perform neurological data collection within the physical therapy plan of care.

PHTA 2392-This laboratory course provides the PTA student skills to provide safe, legal, ethical and appropriate use of screening assessment procedures to include balance testing, functional, coordination, sensory, and cranial nerve testing. Students also utilize skills to assess DTR's, Myotomes, and Dermatomes. It accompanies PHTA 2391 and requires a high level of critical thinking skills related to implementing and modifying physical therapy interventions based on screening assessment data

### **Prerequisites**

Completion of PHTA 2214, 2212, 2101, 2121, 2222, 2241, 2242, 2252, 2231, 2232, 2283, 2202, 2271, and 2213

### **Credit Hours/Contact Hours/Load Hours**

1/15/1

2/75/6

### **Target Audience**

Students admitted to the PTA Program

### **Student Learning Outcomes**

#### **LECTURE AND LAB COURSE OBJECTIVES**

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

1. Demonstrate ability to accurately perform neurological assessments to include:
  - A. integrity of myotomes and dermatomes for nerve roots

- B. balance, function, and coordination testing utilizing a variety of tools to include some standardized questionnaires or forms
  - C. equilibrium & non-equilibrium testing
  - D. sensory testing following appropriate guidelines and differentiate between tests for superficial sensation, proprioceptive sensation, and corticofunction
  - E. assessment of muscle tone
  - F. DTR's
  - G. Cranial nerves
  - H. Glasgow Coma Scale
  - I. Ranchos Los Amigos TBI level scale
2. Given a written scenario or PT evaluation with objective findings demonstrate the ability to assess the disease process in terms of:
- A. location
  - B. etiology
  - C. prognosis
  - D. appropriate assessments
  - E. signs and symptoms
  - F. medical and physical therapy treatments/interventions for the following: CVA, SCI, TBI, MS, disorders of the basal ganglia, cerebellum, cranial nerves, myopathies, peripheral neuropathies, and degenerative neurological diseases.
3. Describe and/or identify the components and functions of the nervous system to include components of the CNS, PNS, ANS.
4. Demonstrate a basic understanding of neuroanatomy and physiology of neurons and muscles.
5. Demonstrate a basic understanding of GTO's and muscle spindles & their function.

6. Demonstrate the ability to;
  - A. Identify dermatome and peripheral nerve sensory boundaries
  - B. Identify and differentiate between the spinal cord tracts for function & location
  - C. Signs and symptoms associated with a variety of spinal cord lesions & syndromes
  - D. Probable location of lesion.
7. Given a case history, or case based problem, demonstrate knowledge of the brain's blood supply by:
  - A. Assessing artery involved
  - B. Area of brain involved
  - C. Probable signs and symptoms associated with a lesion to specific arteries and/or areas of the brain.
8. Differentiate between the types of muscle fibers and nerve fibers.
9. Differentiate between signs and symptoms of UMNL and LMNL.
10. Given a PT evaluation with goals and a POC develop and provide the following patient and/or family education/recommendations regarding:
  - A. Equipment
  - B. Safety issues as they relate to ADLs
  - C. Possible barriers in the home, community and work
  - D. Discharge recommendations based on findings from neurological assessments within the parameters of the POC.
11. Given a PT evaluation with objective findings, goals and POC and/or by the student performance of ROM, MMT, sensory testing, balance testing, coordination testing, etc, the student will demonstrate knowledge and understanding of the findings to assess probable location of lesion.
12. Demonstrate ability to accurately document assessment findings in a SOAP note format or approved assessment forms for:

- A. Sensation
  - B. DTR's
  - C. Balance
  - D. Coordination
  - E. Ranchos Los Amigos TBI scale
  - F. Cranial nerves
13. Demonstrate understanding of neurological terms and diseases in written format or oral discussions.
14. Demonstrate appropriate verbal and non-verbal communication and clear instructions when instructing mock patients to perform assessments for sensation, balance, coordination, cognition, MMT, ROM, cranial nerves, DTR's etc.
15. Given a PT evaluation with objective findings or a mock patient with a spinal cord injury and level of lesion, demonstrate ability to assess:
- A. Probable functional status patient may achieve
  - B. Muscles available for ADL's
  - C. Muscle function and nerve roots for muscles
  - D. Appropriate assessment tests which should be performed to include MMT, sensory assessments, and assessment of ADL's.
16. Demonstrate safety awareness during all assessment activities to include providing appropriate level of assistance and utilizing correct guarding techniques as applicable.
17. Demonstrate awareness of signs and symptoms of autonomic dysreflexia and appropriate emergency measures to take.
18. Demonstrate conduct during lab sessions and laboratory practicals that reflect practice standards that are legal, ethical, safe and within the parameters of the PTA practice act and POC
19. Demonstrate ability to assess a patient's ability to follow & understand instructions.

20. Demonstrate knowledge and utilization of universal precautions during all laboratory procedures.

21. Recognizes when an intervention or assessment is beyond that which is appropriate for a PTA and initiates clarification with the PT.

### **Forms of Assessment**

- Lab Practical examinations
- Written Examinations
- Homework
- Participation
- Lab Activities
- Case Based Problem Solving Activities