

COURSE SYLLABUS

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| LAST REVIEW | Spring 2021 |
| COURSE TITLE | Neuromuscular Rehabilitation |
| COURSE NUMBER | PHTR 0275 |
| DIVISION | Health Professions |
| DEPARTMENT | Physical Therapist Assistant |
| CIP CODE | 51.0806 |
| CREDIT HOURS | 2 |
| CONTACT HOURS/WEEK | Class: 2.5 Lab: 5 |
| PREREQUISITES | None |
| COURSE PLACEMENT | This course is part of a selective admission program. Students must be admitted to the Physical Therapist Assistant program to enroll in this course. |

COURSE DESCRIPTION

This course covers neuroanatomy, neurological dysfunction, neurological treatment theories, pediatrics and geriatrics. The student will learn entry-level knowledge and skills necessary to assess the status of and treat pediatric patients, geriatric patients, and patients with various neurological disorders.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Demonstrate competence in safely administering all tests and measures and interventions as outlined in the plan of care established by the physical therapist.
2. Communicate appropriately, both verbally and non-verbally, with patient/clients, families, physical therapy personnel and other healthcare team members.
3. Adhere to the legal, ethical and professional behavior guidelines established by the American Physical Therapist Association (APTA), the state licensure committee, and the facility of employment.
4. Utilize data collection, problem solving and critical thinking skills to identify the appropriateness of requested interventions.
5. Provide education to the patient/client, family members, physical therapy personnel, other healthcare team members and the community.
6. Identify cultural differences and their impact on the provision of physical therapy services.

7. Be involved in activities that promote life-long learning.
8. Participate in activities that promote the practice of physical therapy and the role of the physical therapist assistant (PTA).
9. Assist facility administration with outcome measurements, material management, reimbursement issues and other administrative roles deemed appropriate for the PTA.

TEXTBOOKS

<http://kckccbookstore.com/>

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

- I. Neuroanatomy
 - A. Organization of the nervous system
 - B. Anatomy of the brain and spinal cord
 - C. Cranial nerves

- II. Somatosensory system
 - A. Organization
 - B. Abnormalities
 - C. Sensory testing

- III. Motor system
 - A. Structure and function
 - B. Muscle tone
 - C. Disorders

- IV. Autonomic nervous system
 - A. Anatomy
 - B. Disorders

- V. Vestibular and visual systems
 - A. Anatomy
 - B. Disorders

- VI. Neuroplasticity

- VII. Motor control and motor learning

- VIII. Normal development and developmental reflexes
- IX. Cognition and perception
- X. Cerebrovascular accident
 - A. Physiology
 - B. Tests and Measures
 - C. Interventions
 - D. Pharmacology
- XI. Traumatic brain injury
 - A. Physiology
 - B. Tests and Measures
 - C. Interventions
- XII. Multiple sclerosis
 - A. Physiology
 - B. Tests and Measures
 - C. Interventions
- XIII. Amyotrophic lateral sclerosis
 - A. Physiology
 - B. Tests and Measures
 - C. Interventions
- XIV. Spinal cord injury
 - A. Physiology
 - B. Tests and Measures
 - C. Interventions
 - D. Ambulation training for patients with SCI
- XV. Peripheral nerve disorders
 - A. Physiology
 - B. Pathology
 - C. Tests and Measures
 - D. Interventions
- XVI. Geriatrics
 - A. Pathology
 - B. Tests and Measures
 - C. Interventions
 - D. Pharmacology

XVII. Pediatrics

- A. Pathology
- B. Tests and Measures
- C. Interventions
- D. Pharmacology

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

- A. Discuss the anatomy and physiology of all components of the nervous system.
 - 1. Identify the location and function of various structures within the brain and spinal cord.
 - 2. Diagram the vascular supply of the brain.
 - 3. Outline the information received and/or sent via each cranial nerve.
 - 4. Compare and contrast the sympathetic and parasympathetic divisions of the autonomic nervous system.
 - 5. Discuss how the nervous system remodels itself via neuroplasticity.

- B. Discuss a variety of neurological disorders and the effect of each on patient functioning.
 - 6. Relate the injury of an anatomical structure to expected symptoms and/or functional limitations.
 - 7. Internalize the effect of autonomic nervous system functioning on a patient's performance.
 - 8. Compare and contrast the symptoms of stroke given the arterial supply affected.
 - 9. Discriminate between behaviors that result from a right or left hemisphere lesion.
 - 10. Infer expected impairments and functional limitations arising from an upper versus lower motor neuron lesion.
 - 11. Summarize the role of the PTA in the stages of recovery following stroke and traumatic brain injury.
 - 12. Differentiate common complications and expected functional outcomes based on the level of injury in a patient following a spinal cord injury.
 - 13. Compare and contrast the clinical presentation of ALS and MS.
 - 14. Differentiate the signs and symptoms of common peripheral nerve disorders.
 - 15. Compare and contrast the expected functional limitations for various disorders of the vestibular system.
 - 16. Discuss the effect on function of visual deficits resulting from lesions at various locations of the visual pathway.

- C. Demonstrate an understanding of pathologies and treatment applications specific to the practice of physical therapy with pediatric patients.
 - 17. Analyze the effect on function of the persistence or lack of attainment of developmental reflexes, righting and equilibrium reactions.
 - 18. Observe the assessment of developmental reflexes on a pediatric patient.

19. Discriminate between normal and abnormal development in an infant or young child.
 20. Demonstrate progression of treatment techniques in each developmental position.
 21. Summarize the typical clinical presentation of various pediatric diagnoses.
 22. Accept the role of family centered care in treating pediatric patients.
- D. Demonstrate an understanding of pathologies and treatment applications specific to the practice of physical therapy with geriatric patients.
23. Analyze normal age-related physiological changes as they relate to various theories of aging.
 24. Outline the benefits of physical activity for the elderly population.
 25. Summarize the typical clinical presentation of various geriatric diagnoses.
- E. Perform various physical therapy tests and measures used in the assessment of patients with neurological, pediatric and geriatric disorders to identify current level of functioning.
26. Internalize the importance of conducting a multi-systems assessment prior to implementing the PT plan of care.
 27. Perform cranial nerve and sensory testing on a simulated patient.
 28. Predict the level of a spinal injury based on dermatome and myotome assessment.
 29. Perform coordination and functional balance assessments on a simulated patient.
 30. Assess a simulated patient for memory and perception deficits.
 31. Demonstrate testing utilized to determine changes in muscle tone.
 32. Assess alignment of a patient's trunk and extremities during activity completion.
 33. Perform various standardized and functional assessments to determine level of function and independence for patients with neurological, pediatric and geriatric disorders.
- F. Assimilate assessment results to implement a treatment session within the PT plan of care for a patient with neurological disorder.
34. Utilize appropriate facilitation and inhibition strategies to address sensory dysfunction.
 35. Instruct a patient in a variety of activities to address balance and coordination dysfunction.
 36. Demonstrate treatment of a simulated patient with a neurological condition using a variety of specialized treatment techniques (PNF, NDT, etc).
 37. Provide gait and locomotion training to a simulated patient with neuromuscular disorder.
 38. Examine the use of assistive and adaptive devices, including orthotics, in the treatment of a patient with neurological dysfunction.

39. Discuss the use of electrotherapeutic modalities as an adjunct to treatment in a patient with neurological dysfunction.
 40. Propose adaptation techniques useful when working with patients affected with memory deficits.
 41. Integrate the concepts of motor control and motor learning into a simulated patient scenario.
 42. Develop treatment activities within the PT plan of care that address the improvement of activities of daily living.
 43. Outline a treatment plan within the PT plan of care for a patient with neurological dysfunction.
 44. Outline appropriate progression of an exercise program within the plan of care.
 45. Provide appropriate instruction to a patient, family member, or caregiver for a simulated patient scenario.
 46. Value the importance of adhering to appropriate documentation standards when completing a SOAP note for a simulated patient scenario.
 47. Appreciate the psychological impact of neurological dysfunction on the individual and family members.
- G. Appreciate the role of the PTA as a professional member of the rehabilitation team in the treatment of a patient with neurological dysfunction.
48. Analyze the role of the PTA in assisting the physical therapist with the evaluation of the patient with neurological, pediatric and geriatric disorders.
 49. Compile a research report related to treatment of a given neurological disorder.
 50. Discuss when it is appropriate to communicate with the PT based on a patient's response to treatment or change in status.
 51. Communicate with the PT when the direction to perform a skill is beyond that which is appropriate for the PTA.
 52. Display a professional demeanor during all classroom interactions.
 53. Behave in a manner that demonstrates a commitment to legal, ethical and safe practice standards in all simulated patient treatment scenarios.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

College Catalog

<https://www.kckcc.edu/academics/catalog/index.html>

College Policies and Statements

<https://www.kckcc.edu/about/policies-statements/index.html>

Accessibility and Accommodations

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.