



**MERCER**  
COUNTY COMMUNITY COLLEGE

## COURSE OUTLINE

Course Number	Course Title	Credits
PTA 114	Applied Kinesiology	2
Hours: Lecture/Lab/Other	Co- or Pre-requisite	Implementation Semester & Year
1/1/0	Pre = PTA 105, PTA 222	Fall 2023
<b><u>Catalog description:</u></b>		

Learners will apply kinesiology concepts to clinical scenarios and exercise design, analyze internal and external forces acting during various movement patterns, understand the biomechanics of common functional movements, and develop palpation skills.

**General Education Category:**  
Not GenEd

**Course coordinator:** ([Rachel Cordasco](mailto:CordascR@mccc.edu), 609-570-3385,  
[CordascR@mccc.edu](mailto:CordascR@mccc.edu))

### **Required texts & Other materials:**

**Recommended:**

Dutton M, (2019) *Orthopaedics for the Physical Therapist Assistant*, 2<sup>nd</sup> ed., Jones & Bartlett, ISBN# 9781284139310

Lippert, L. (2017). *Clinical Kinesiology & Anatomy*, 6<sup>th</sup> ed., Philadelphia PA, FA Davis Co. ISBN 978-0-8036-5823-3

Biel A, (2014). *Trail Guide to the Body 5th* ed., Boulder CO: Books of Discovery Publishers. ISBN 978-0-9829786-5-8

### **Course Student Learning Outcomes (SLO):**

***The student will be able to...***

1. Analyze functional movement patterns to determine joint motions, muscle recruitment, planes, and relation to gravity/resistance
2. Classify the type of muscle contractions, synergists, stabilizers, agonists and antagonists that are utilized during functional movement patterns
3. Analyze a functional movement pattern and determine the osteokinematic and arthrokinematic motions that take place
4. Create treatment interventions to meet provided goals and specific parameters
5. Demonstrate accurate palpation of bony and soft tissue landmarks
6. Apply rehabilitation strategies to address specific functional and physical limitations

## **Course-specific Institutional Learning Goals (ILG):**

**Institutional Learning Goal 1. Written and Oral Communication in English.** Students will communicate effectively in both speech and writing.

**Institutional Learning Goal 3. Science.** Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

**Institutional Learning Goal 9. Ethical Reasoning and Action.** Students will understand ethical frameworks, issues, and situations.

**Institutional Learning Goal 10. Information Literacy:** Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

**Institutional Learning Goal 11. Critical Thinking:** Students will use critical thinking skills understand, analyze, or apply information or solve problems.

## **Program Learning Outcomes for Physical Therapist Assistant Program (PLO)**

### **Course Learning Objectives**

1. Identify each of the cardinal planes of the human body
2. Identify the origin, insertion, innervation, and action of the prime movers for the trunk, upper extremity and lower extremity
3. Name the osteokinematic movements that occur in each cardinal plane when in anatomic position
4. Name the osteokinematic motions that occur at each joint in the human body
5. Define the various types of muscle contractions
6. Describe muscle locations on the body
7. Describe the force-velocity relationship
8. Differentiate between active, passive, and active assisted movements
9. Explain the convex on concave and concave on convex rules
10. Describe the relationship between agonists and antagonists
11. Differentiate between mono-articular and bi-articular muscles
12. Express how the active length-tension relationship of muscle pertains to exercise programs and daily activities
13. Express the difference between active and passive insufficiency
14. Identify muscles that are utilized during various daily activities
15. Utilize descriptive and medical terminology to accurately describe positions of the body and joints
16. Apply kinesiology concepts to determine appropriate methods to stretch various muscles
17. Apply kinesiology concepts to determine appropriate methods to strengthen various muscles, provided with different parameters
18. Determine body and joint positions required for movements against gravity, gravity assisted, and gravity eliminated
19. Relate the axis of motion to line of pull and resultant muscle contractions
20. Integrate knowledge from BIO 103, BIO 104, PTA 105, PTA 215, and PTA 107 into the new material in this PTA 220 course during lab scenarios, case studies, discussions, quizzes, assignments, and written exams
21. Determine how to strengthen muscles at a joint where a mono-articular muscle and bi-articular muscle that perform the same action are located at the same joint
22. Analyze functional movement patterns to determine joint motions, muscle contractions, planes, and relation to gravity/resistance
23. Distinguish between close and open chain movements
24. Classify the type of muscle contraction that occurs during functional movement patterns
25. Analyze a functional movement pattern and determine the osteokinematic and arthrokinematic motions that take place
26. Create treatment interventions to meet provided goals and specific parameters
27. Demonstrate effective communication skills with classmates and instructors
28. Participate in class discussions either in person or remotely
29. Access the Blackboard shell for this course

30. Complete online exams, as applicable
31. Participate in online written and video discussion posts, as applicable
32. Use knowledge of functional anatomy to predict consequences of limited joint range of motion motion, and injury
33. Determine the pattern of muscle contractions in relation to various sources of resistance, including gravity, resistance bands, exercise equipment and momentum
34. Explain how the force required of a muscle may change during an activity
35. Identify the relationship between anatomical structure, physiological function, and mechanical principles as they relate to the performance of basic and complex motor skills.
36. In lab, perform various exercises in different positions and explain the levels of difficulty as it relates to muscle function and identify levers, effort arm, resistance arm, fulcrum, resistance, and force.
37. In lab, examine the biomechanics of running.
38. Identify the impact of spinal curvature on compression and shear forces on the lumbar spine during lifting.
39. Identify the mechanisms by which various trunk muscles are able to resistance spinal flexion moments during lifting.
40. Use palpation skills to correctly locate on yourself and classmates, the bony landmarks and soft tissues structures identified
41. Explain how the hip and the ankle influence the knee in a closed kinetic chain movement
42. Explain how the pelvis influences closed kinetic chain movements of the joints of the lower extremity
43. In lab, gather postural observations of various classmates and document findings using medical and descriptive terminology
44. Compare the arthrokinematics of a joint during an open kinetic chain and closed kinetic chain movement
45. Describe how the deltoid and the rotator cuff muscles work together to produce glenohumeral joint abduction
46. Utilize patient-sensitive language in verbal and written communication

**Units of study in detail – Unit Student Learning Outcomes:**

Each unit is 2 weeks		MCCC ILG Goals:	Course Learning Objectives:
<b>Unit 1</b>	Functional Anatomy	1, 3, 9, 10, 11	2, 5, 6, 7, 8, 10, 11, 15, 20
<b>Unit 2</b>	Biomechanical Principles	1, 3, 9, 10, 11	1, 3, 4, 9, 12, 13, 15, 18, 19, 20, 23
<b>Unit 3</b>	Lower Extremity	1, 3, 9, 10, 11	14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 32, 33, 34, 35, 36, 40, 41, 42, 44
<b>Unit 4</b>	Upper Extremity	1, 3, 9, 10, 11	14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 32, 33, 34, 35, 40, 44, 45
<b>Unit 5</b>	Spine	1, 3, 9, 10, 11	14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 32, 33, 34, 35, 38, 40, 42, 43, 44

<b>Unit 6</b>	Biomechanics of functional movement matters	1, 3, 9, 10, 11	14, 15, 16, 17, 18, 19, 20, 22, 24, 25, 26, 32, 33, 34, 35, 37, 39, 40, 41, 44
<b>Unit 7</b>	Application of cumulative content to clinical scenarios	1, 3, 9, 10, 11	14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 32, 33, 34, 35, 44

**Evaluation of student learning:**

<b>% of grade</b>	<b>Activity</b>	<b>Number within course</b>
50	Written Exams	4
NA	Quizzes**	0
15	Article Review	1
30	Papers / Assignments	3
NA	Presentation(s)	0
5	Generic Abilities Assessment	Continuous

Written exams will contain a minimum of 50 multiple-choice questions.

Article reviews incorporate current evidence-based research and clinical practice guidelines, to ensure preparedness for clinical practice.

Papers/assignments will provide opportunities for learners to independently apply concepts to course concepts to clinical scenarios .

All courses in the professional phase of the PTA program have a “generic abilities assessment” to assess the affective learning domain. This may consist of a grading rubric completed by the instructor, a self-reflection paper completed by the learners, etc.