



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2006-2007
(i.e. 2003-2004)

NEXT REVIEW: 2011-2012
(i.e. 2008-2009)

STATUS: A
(A, I, D)

COURSE TITLE: Applied Kinesiology Lab

COMMON COURSE NUMBER: PHT 2120L

CREDIT HOURS: 1

CONTACT HOUR BREAKDOWN
(per 16 week term)

CLOCK HOURS:
(Voc. Course ONLY)

Lecture: Lab: **32**
Clinic: Other:

PREREQUISITE(S): PHT 2224L

COREQUISITE(S): PHT 2120

PRE/COREQUISITE(S):

COURSE DESCRIPTION (750 characters, maximum):

Laboratory sessions for Applied Kinesiology (PHT 2120) are designed to provide opportunities for the students to practice the skills of analyzing normal and pathological gait, along with normal and abnormal movements of the head, spine, pelvis, UE and LE. Performance of special tests will be practiced. Palpation of surface anatomy and review of anatomical / bony landmarks occurs. Through completion of lab activities and case studies, the student correlates patient problems to various pathologies with their deficits in functional activities and gait. Therapeutic interventional approaches which include progression will be developed to address functional deficits. Orthotic interventions for the spine and extremities are applied with an emphasis on correcting pathological biomechanics.

UNIT TITLES

- 1.0 *Anatomy Review*
- 2.0 *Biomechanics*
- 3.0 *Pelvis and Hip*
- 4.0 *Knee*
- 5.0 *Ankle and Foot*
- 6.0 *Normal Gait*
- 7.0 *Identifying Abnormal Gait Patterns*
- 8.0 *Analysis of LE Functional Activities*
- 9.0 *LE Practicals*
- 10.0 *Shoulder*
- 11.0 *Elbow, Wrist, and Hand*
- 12.0 *Head, TMJ and Spine*
- 13.0 *Analysis of UE Functional Activities*
- 14.0 *UE Practicals*
- 15.0 *Simulated Clinic*



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ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

1. Assessment of reading and online assignments via submission of homework projects;
2. Pre-lab exercises;
3. Participation in Discussion Forums on the WebCT site;
4. Skill Checks and Practical Examinations to assess competency

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills *:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: <i>(highlight in green ALL that apply)</i> (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

** General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*



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Common Course Number: PHT 2120L

UNITS

Unit 1 Anatomy Review

General Outcome:

- 1.0 The student will be able to discuss basic anatomical considerations in preparation for analyzing human movement.

Specific Instructional Objectives:

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

- 1.1 Review basic neuromuscular anatomy.
- 1.2 Identify prime movers for various muscle actions.



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Unit 2 Biomechanics

General Outcome:

- 2.0 The student will be able to discuss principles of joint structure and properties of muscles as they relate to normal joint biomechanics.

Specific Instructional Objectives:

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

- 2.1 Analyze various movements in terms of the joints and the muscles that are involved.
- 2.2 Describe how movements can be made easier or more by the application of various forces.
- 2.3 Refine ability to differentiate between types of muscle activity that occurs in various movement patterns.



Common Course Number: PHT 2120L

Unit 3 Pelvis and Hip

General Outcome:

- 3.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the pelvis and hip.

Specific Instructional Objectives:

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

- 3.1 Palpate the important skeletal landmarks of the pelvis.
- 3.2 Discuss the interaction between the pelvis, the lumbar spine and hip movements.
- 3.3 Identify and describe the position of the pelvis during normal function.
- 3.4 Palpate the important skeletal landmarks of the hip joint.
- 3.5 Discuss the relationship between pelvic position and hip position.
- 3.6 Describe the position of the hip joint during function.
- 3.7 Discuss the functional consequences of hip joint impairments.
- 3.8 Palpate and identify the activity of hip joint muscles during normal function.
- 3.9 Discuss the effect of posture on the activity of hip joint muscles.
- 3.10 Discuss the activity required of the hip muscles during lower extremity function.
- 3.11 Discuss the effects of muscle impairments on the function of the hip
- 3.12 Observe special tests to determine the status of the hip's function.



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Unit 4 Knee

General Outcome:

- 4.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the knee.

Specific Instructional Objectives:

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

- 4.1 Palpate the important skeletal landmarks of the knee.
- 4.2 Recognize the normal mobility of the joints of the knee.
- 4.3 Describe the positions of the knee during normal function.
- 4.4 Palpate and identify the activity of the primary muscles of the knee.
- 4.5 Discuss the effects of hip and knee position on the stretch of the two joint muscles of the knee.
- 4.6 Discuss the effects of trunk positions on muscle activity at the knee.
- 4.7 Describe the muscle activity that occurs during knee function.
- 4.8 Observe special tests to determine the status of the knee's function



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Unit 5 Ankle and Foot

General Outcome:

- 5.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the ankle and foot.

Specific Instructional Objectives:

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

- 5.1 Palpate the important skeletal landmarks of the ankle and foot complex.
- 5.2 Recognize the normal mobility of the joints of the ankle and foot.
- 5.3 Observe the contributions of the individual joints of the ankle and foot to triplanar motion.
- 5.4 Observe the motion of the foot and leg in closed-chain activities.
- 5.5 Describe the positions of the ankle and foot during normal function.
- 5.6 Palpate and identify the activity of ankle and foot muscles during normal function.
- 5.7 Discuss the effects of muscle tightness on ankle and foot function.
- 5.8 Discuss differences in strength in antagonistic muscle groups of the ankle.
- 5.9 Identify the muscle activity present during common lower extremity functions.
- 5.10 Observe special tests to determine the status of the ankle and foot's function



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Unit 6 Normal Gait

General Outcome:

- 6.0 The student will be able to identify through gait analysis the biomechanical and muscular components to normal gait.

Specific Instructional Objectives:

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

- 6.1 Observe normal gait and the necessary motions/contractions necessary to gait cycle breakdown.
- 6.2 Perform a systematic gait analysis.
- 6.3 List normal ROM of the lower extremities and pelvis during gait.
- 6.4 Identify and measure the following gait characteristics: step length, stride length, cadence and base of support.
- 6.5 Identify the phases of the gait cycle during gait analysis of peer.
- 6.6 Recognize muscles that are active during each stage of the gait cycle and types of contractions.



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Unit 7 Identifying Abnormal Gait Patterns

General Outcome:

- 7.0 The student will be able to recognize pathological gait and understand how abnormalities in joint and muscle function contribute to the gait deviations.

Specific Instructional Objectives:

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

- 7.1 Recognize common gait deviations during analysis.
7.2 Discuss strength, range of motion, balance and coordination deficits contributing to specific gait deviations.
7.3 Correlate gait deviations with musculoskeletal structure and function.
7.4 Correlate gait deviation with specific pathological conditions.
7.5 Document gait deviations.
7.6 List specific interventions to address patient deficits contributing to gait deviations.
7.7 Identify specific data collection necessary to determine patient deficits/problems contributing to gait deviations.



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Unit 8 Analysis of LE Functional Activities

General Outcome:

- 8.0 The student will be able to perform comprehensive task analysis of functional activities involving the lower extremity.

Specific Instructional Objectives:

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

- 8.1 Recognize deviations from normal performance of functional task.
8.2 Discuss strength and range of motion deficits contributing to abnormal biomechanics hindering performance of task.
8.3 Discuss normal biomechanics of movement detailing motion involved at each joint and musculature contraction necessary to perform specific activity.
8.4 Identify specific data collection necessary to determine patient deficits/problems contributing to abnormal performance of task.
8.5 List specific interventions to address patient deficits to restore normal biomechanics for performance of task.



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Unit 9 LE Practicals

General Outcome:

- 9.0 The student will be able to satisfactorily complete a practical examination related to the analysis of LE movements and identification of deficits during the performance of functional tasks and gait.

Specific Instructional Objectives:

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

- 9.1 Satisfactorily complete a practical examination related to the analysis of LE movements and identification of deficits during the performance of functional tasks and gait.



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Unit 10 Shoulder

General Outcome:

- 10.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the shoulder

Specific Instructional Objectives:

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

- 10.1 Palpate the important skeletal landmarks of the shoulder complex.
- 10.2 Describe the contributions of the individual joints to shoulder complex motion.
- 10.3 Discuss the effects of limited joint mobility on shoulder function.
- 10.4 Palpate and identify the activity of shoulder muscles during normal function.
- 10.5 Discuss differences in strength in antagonistic muscle groups of the shoulder.
- 10.6 Identify the kinds of muscle contractions used during shoulder function.
- 10.7 Observe special tests to determine the status of the shoulder's function



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Unit 11 Elbow, Wrist and Hand

General Outcome:

- 11.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the elbow, wrist and hand.

Specific Instructional Objectives:

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

- 11.1 Palpate the important skeletal landmarks of the elbow joint
- 11.2 Identify available range of motion (ROM) of the elbow joint
- 11.3 Discuss the structures limiting ROM at the elbow joint
- 11.4 Discuss the functional consequences of elbow joint impairments
- 11.5 Palpate and identify the activity of the primary muscles of the elbow during normal function
- 11.6 Discuss the effects of different elbow positions on muscle activity and elbow strength
- 11.7 Discuss ways to distinguish activity of individual elbow muscles
- 11.8 Describe ways to stretch muscles of the elbow
- 11.9 Palpate the important skeletal landmarks of the shoulder complex
- 11.10 Describe the contributions of the individual joints to shoulder complex wrist and hand
- 11.11 Recognize the normal mobility of the joints in the wrist and hand
- 11.12 Describe the positions of the joints in the wrist and hand during normal function
- 11.13 Palpate and identify the activity of forearm muscles during normal function
- 11.14 Discuss differences in strength in antagonistic muscle groups of the forearm
- 11.15 Identify the kinds of muscle contractions used during wrist and finger function
- 11.16 Observe special tests to determine the status of the elbow, wrist and hand's function



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Unit 12 Head, TMJ and Spine

General Outcome:

- 12.0 The student will be able to determine the specific joint characteristics and muscle properties that are required for normal function at the head, TMJ and spine.

Specific Instructional Objectives:

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

- 12.1 Observe and palpate facial muscle activity at the eyes, nose, and mouth
- 12.2 Examine eye movements and describe the axes of motion
- 12.3 Identify what muscle(s) contributes to specific facial expressions
- 12.4 Palpate the important skeletal landmarks of the TMJ
- 12.5 Describe the normal movement of the TMJ and recognize deviations in movement patterns.
- 12.6 Discuss the effects of abnormal posture on TMJ mechanics
- 12.7 Palpate the important skeletal landmarks of the TMJ
- 12.8 Describe the normal movement of the TMJ and recognize deviations in movement patterns
- 12.9 Discuss the effects of abnormal posture on TMJ mechanics
- 12.10 Observe special tests to determine the status of the head, TMJ and spine's function
- 12.11 Relate the biomechanics of the various regions of the spine to normal function.
- 12.12 Describe how the cervical, thoracic and lumbar spine function when muscles act upon the specific spinal region.



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Unit 13 Analysis of UE Functional Activities

General Outcome:

- 13.0 The student will be able to perform comprehensive task analysis of functional activities involving the upper extremity.

Specific Instructional Objectives:

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

- 13.1 Recognize deviations from normal performance of functional task.
13.2 Discuss strength and range of motion deficits contributing to abnormal biomechanics hindering performance of task.
13.3 Discuss normal biomechanics of movement detailing motion involved at each joint and musculature contraction necessary to perform specific activity.
13.4 Identify specific data collection necessary to determine patient deficits/problems contributing to abnormal performance of task.
13.5 List specific interventions to address patient deficits to restore normal biomechanics for performance of task.



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Unit 14 UE Practicals

General Outcome:

- 14.0 The student will be able to satisfactorily complete a practical examination related to the analysis of UE movements and identification of deficits during the performance of a functional task.

Specific Instructional Objectives:

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

- 14.1 satisfactorily complete a practical examination related to the analysis of UE movements and identification of deficits during the performance of a functional task.



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Unit 15 Simulated Clinic

General Outcome:

- 15.0 The student will be able to perform data collection, functional task analysis and appropriate interventions based on specific patient cases in a simulated clinical setting.

Specific Instructional Objectives:

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

- 15.1 Analyze a simulated patient's performance of a functional task and identify deviations from normal.
- 15.2 Apply concepts of normal biomechanics of movement to determine possible patient deficits contributing the abnormal movement pattern.
- 15.3 Perform specific data collection (goniometry, manual muscle testing, palpation, pain assessment, gait analysis, etc) to determine patient deficits/problems contributing to abnormal performance of task.
- 15.4 Based on findings of simulated session, develop and implement specific interventions to address patient deficits to restore normal biomechanics for performance of task.
- 15.5 Provide a rationale for interventions selected.