

Three Rivers Community College

HPE\*K243 Kinesiology with lab

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Office Hours: M,W,F 10-11; T,R 1-2

Prerequisites: ENG\*K101 and BIO\*K211

Course Description

This course will be designed as a basic introduction to the fundamentals of Kinesiology. The integration of the anatomy of human movement and the mechanics of human movement will be the focal point of the course. Knowledge will be obtained through classroom lecture, hands on practical experiences, lab activities and other various assessment techniques. A broader understanding of human anatomy, through active movement and the application of this knowledge, in education, coaching, medicine and other areas of life in a practical method will be obtained.

Course Outcomes

Upon completion of this course the student will have:

1. Use basic kinesiology terminology when describing movement of the body and the body segments in space.
2. Identify the cardinal planes of the body and be able to demonstrate movement in each of the three planes; sagittal, frontal, and transverse, and the axes for these motions
3. Describe the different types of motion, such as translator and rotary, and relate these to motions within the human body
4. Describe and cite examples of movements in an open and closed kinematic chain.
5. Describe and cite examples of the different types of arthrokinematic surface motions that occur between joint surfaces; rolling, spinning, and sliding.
6. Explain the three classes of levers and provide an example of each in the human body
7. List Newton's laws of motion and distinguish how they apply to the human body.
8. Identify the elements of a force vector diagram and explain the tangential force and its significance in joint motion.
9. Describe the differences between force and torque.
10. Describe the properties of irritability, excitability, and transmission that are the unique capabilities of nerve and muscle tissue
11. Describe the following common movement system impairments: weakness, abnormal muscle tone, coordination problems, and involuntary movements.
12. Identify the differences in muscle fiber types and their significance in muscle function.
13. List and explain the components that determine muscle force.
14. Outline the importance of lever arm length and muscle length in terms of muscle force production.

15. Identify the bones, joints and muscles of the shoulder complex.
16. Discuss the relationship between each of the joints that determine scapular motion.
17. Discuss the influence of gravity and body position in determining muscles that act on the shoulder complex during functional motions.
18. Identify the bones, joints, soft tissue, and muscles of the elbow/forearm complex.
19. Discuss the relationship between the elbow and radioulnar joints and their contribution to functional movement.
20. Discuss the influence of gravity and body position in determining muscles that act on the elbow/forearm complex during functional motions.
21. Describe commonly encountered movement disorders of the elbow complex and their functional consequences.
22. Name muscle groups that function to position and move the wrist and hand in specific functional motions.
23. Describe commonly encountered movement disorders of the wrist/hand and their functional consequences.
24. Express the differences in the various spinal regions
25. Explain the mechanisms of trunk motions and how the spine is stabilized during motion.
26. Discuss the relationship between the pelvis, low back, and trunk, and their contributions to functional movement.
27. Discuss the relationship between the tibiofemoral and patellofemoral joints and their contribution to functional movement.
28. Name muscle groups that function to position and move the knee in specific functional activities.
29. Discuss the relationship between the rearfoot and midfoot, and their contribution to functional movement.
30. Discuss the influence of the foot position during gait.
31. Use gait terminology fluently when describing or analyzing human gait.
32. Identify the phases of the gait cycle and the main functional tasks associated with each phase.
33. Summarize the age-related differences seen in the gait characteristics of children, mature adults and older adults
34. Contrast and compare walking with running.
35. Describe the kinematics of common occupational activities such as lifting.

#### Instructional Materials

Lippert, L. 2011 Clinical Kinesiology and Anatomy, 5<sup>th</sup> ed. Philadelphia, Pa: F.A. Davis Company

Lippert, L. 2011 Laboratory Manual for Clinical Kinesiology and Anatomy, 3<sup>rd</sup> ed. Philadelphia, Pa: F.A. Davis Company

#### Academic Misconduct

The instructor has primary responsibility for control over classroom behavior and maintenance of academic integrity, and can request the temporary removal or exclusion from the classroom of any student engaging in conduct that violates the general rules and regulations of the

institution. Extended or permanent exclusion from lecture or laboratory activities or further disciplinary action can only be effected through appropriate procedures of the institution.

Plagiarism, cheating on quizzes or tests, or any form of academic dishonesty is strictly prohibited. Students guilty of academic dishonesty directly or indirectly will receive a zero for the exercise, quiz or test and may receive an “F” grade for the course in addition to other possible disciplinary sanctions which may be imposed through the regular institutional procedures. Any student that believes that he or she has been erroneously accused may appeal the case through the appropriate institutional procedures if their grade was affected.

#### Grade Determination

a. Written Exams

There will be 4 written exams each worth 100 points

b. Laboratory Experiences and skills

Each lab is worth 50 points

c. Homework/classwork/vocabulary : 20 points each

d. Abstract

#### Make-Up Work

Any assignment can be obtained from the instructor or on blackboard. Unit tests can only be made up by special arrangement with the instructor. Make-up tests will be granted on an individual basis only following a conference with the instructor; where the reason(s) for missing the test must be determined mitigating circumstances beyond the control of the student such as, illness, death in the family, or change in condition of employment. If two tests are missing during the semester and/or if the final exam is missed the student will receive an “F” grade if he or she is failing other parts of the course or an “I” if the student is passing all other parts of the course.

#### Revisions to the Syllabus

Students are responsible for learning all of the objectives and all of the items in the course outline whether they are discussed in lecture, and/or lab or not. The instructor reserves the right to revise the objectives, topic outline, or academic schedule contained in the syllabus without notice. However, if the revisions affect scheduled unit tests, a 48-hour notice will be given for the new test date.

#### Technology

Cellular phones and beepers are only allowed in class or lab if they are turned off or in silent mode. Under no circumstances are phones to be answered in class. When there are

extenuating circumstances that require that a student be available by phone or beeper, that student must speak to the instructor prior to class, so that together they can arrive at an agreement.

### Special Notice

If you have a visible or hidden disability which may require classroom, lab and/or test-taking modifications, please see me as soon as possible. If you have not registered with Chris Scarborough, learning specialist or a counselor in the Student Services Development Center, you must do so early in the semester.

### Course Outline

<u>Week</u>	<u>Lecture Topic</u>	<u>Readings</u>
1	Introduction  Basic Concepts in Kinesiology: Kinematics  Basic Concepts in Kinesiology: Kinematics Lab	chapters 1,2,3
2	Mechanical Principles: Kinetics  Mechanical Principles: Kinetics lab	chapters 4,8
3	Movement System: Muscle and Nerve Physiology and Motor Control  Motor Control Lab	chapter 6
4	Muscle Activity and Strength  Muscle Activity and Strength Lab	chapter 5
5	Exam 1  Shoulder Complex  Shoulder Complex Lab	chapter 9,10
6	Elbow and Forearm  Elbow and Forearm Lab	chapter 11
7	Wrist and Hand  Wrist and Hand Lab	chapters 12,13

8	Exam 2	
	Head, Neck and Back	chapter 15
	Head, Neck and Back Lab	
9	Pelvis and Hip	chapter 17,18
	Pelvis and Hip Lab	
10	Knee	chapter 19
	Knee Lab	
11	Ankle and Foot	chapter 20
	Ankle and Foot Lab	
12	Exam 3	
	Stance and Gait	chapter 21,22
	Stance and Gait Lab	
13	Applications in Daily functional Activities	
	Applications in Daily Functional Activities Lab	
14	Sports and Recreation	
	Sports and Recreation Lab	