KINESIOLOGY SYLLABUS

I. COURSE
EXER 441 Kinesiology
Keith Hardy Ph.D., MPT
E-mail: hardyk@evangel.edu

II. COURSE DESCRIPTION
A course designed to aid the student’s understanding of the muscular control of the body and the mechanics of body and implement control.

III. COURSE PURPOSE
This course is designed to develop a basic understanding of sport mechanics and an appreciation of how superior sport techniques are based on the use of developmentally appropriate scientific concepts and natural law.

IV. COURSE OBJECTIVES
At the completion of this course the student will be able to:

1. Define such terms as kinesiology, biomechanics, and sport mechanics and explain how each are applied to teaching physical education and coaching.
2. Identify the various movements of each body part.
3. Describe the 4 planes of motion, illustrate movement through each plane, and identify movements by the plane in which they are executed.
4. Explain the relationship between gravity, weight, mass and inertia.
5. Differentiate between speed, velocity, and acceleration.
6. Explain the difference between linear, angular, and general motion and how these apply to sports movements.
7. Identify forces, acceleration, momentum, work, power, and energy and describe how these apply to sports movements.
8. Identify the components involved in equilibrium and stability.
9. Analyze sport skills using the previous information learned about sport mechanics.
10. Identify and correct errors in sport skills using the previous information learned about sport mechanics.
11. Apply anatomical and mechanical analysis of human motion to a wide variety of activities including the learning and improvement of performance in motor skills, the evaluation of exercises for special purposes, and the evaluation of equipment used in athletics and exercise. This ability should be developed to the extent that the student will be developed to the extent that the student is able to demonstrate a systematic approach to an analysis and to complete it with a basic level of competence. Specifically:
   1. The student has an understanding of visual and photographic limitations (e.g., visions, distance, perspective, viewing angle) in the qualitative diagnosis of movement.
   2. The student is able to observe and describe the mechanical purpose of a human movement.
   3. The student will be able to determine the anatomical and mechanical factors that relate to the performance of an observed movement.
   4. The student will be able to evaluate the critical features present or lacking in a movement pattern and their suitability in an individual performer's technique relative to the particular purpose of the movement.
   5. The student will be able to identify those factors which limit performance and establish a priority for change in those factors most likely to lead to improvement in performance.
V. COURSE METHODS AND PROCEDURES
A. Lecture
B. Video
C. Class discussion
D. Assigned textbook readings
E. Quizzes and tests
F. Computer labs: software for motion analysis project

VI. COURSE REQUIREMENTS
A. Attendance and participation:
   Regular class attendance is expected. You must be present in order to achieve the full benefits of
   the class activities. Three tardies will make up one absence. Three instances of early exits will also
   result in one absence. You are responsible for material covered in class and to turn in assignments
   on time. If possible, please inform the instructor in advance of the days that you know you will
   miss class. This course is highly interactive through lecture, discussion and computer lab time. If
   absent from class when test or assignments are due you must inform teacher ahead of time.
   Attendance is required when student teaching assignments are scheduled. This is a 400 level class;
   therefore you will only be allowed 5 absences.
   Quizzes will be given at the beginning of class – Don’t Be Late!!!

B. Assignments:

   1. Chapter Questions / Problem (5%)- Chapter questions or problem assignments will be posted
      on Angel.

   2. Motion Analysis Critiques (5%)- Students are responsible for reading, analyzing and discussing
      articles from Kinesiology related journals.

   3. Project (25%)

      Written Paper –

      I. Introduction
      The importance of the skill, why you selected it, general description and information about the skill,
      etc. (5 – 8 paragraphs or 1 – 2 pages)

      II. Anatomic Analysis
      Divide the skill into 4 phases - stance, preparatory phase, movement phase, follow-through. Find
      pictures or diagrams to illustrate the position of each phase. For each phase, give the movement of
      each joint that has taken place from the anatomical position to phase one, and then from each phase
      to the next. Be sure to list right and left sides separately for the joints where this applies. If both
      sides have the same movement, list this as "right and left hip", etc. You will be analyzing the
      movements that take place between the position in one picture and the position in the next picture,
      so be sure that your pictures are as correct as possible. (8 – 12 pages)

      III. Biomechanical Analysis
      This will be the longest and most important chapter of your paper. You will discuss as many
      biomechanical principles as you can find represented in your sport skill. These will include both
      linear and angular kinematics and kinetics, such concepts as type of motion, inertia, force, torque,
      muscle tension, type of muscle contractions being used, gravity, aerodynamics, Newton's laws of
      motion, the use of muscle strength, power, endurance, flexibility, etc. as they are applied in your
      specific sport skill. This will be a qualitative biomechanical analysis of the sport skill which you
      have selected. You can also include in this chapter suggestions about performing and teaching your
      skill and conditioning or hints that would improve performance. (5- 10 pages)

   IV. References
   You must include a reference of the sources used for your paper. Most of these will be used for the
   third chapter. If you are quoting directly from a source, use reference it APA style to identify the
   source of the information.
Minimum 10 references five of which must be from a study in a refereed journal.

**Presentation**

Power Point & Communication Skills

This will be primarily from your Chapter III in giving the class information and suggestions for performing and teaching the skill and explaining how the various biomechanical principles are used most effectively in performing your skill. You may need to briefly explain and demonstrate your skill. This report should be as practical as possible and useful to other class members. Do not simply read your written paper make the power point presentation as interactive as possible. Talk to the class being as professional and scientific as possible with the assumption that you audience is knowledgeable about the areas of anatomy and biomechanics.

**NO LATE WORK ACCEPTED**

(Assignments are due at the start of class the day they are due – no exceptions – no excuses. Pre-pare ahead of time!!! Have back-up plans in place)

VII. EVALUATION

A. Exams 65%
B. Project 15%
C. Worksheets & Problems 10%
D. Motion Analysis Critiques 5%