KINE 3135 - Biomechanics and Anatomical Kinesiology Laboratory

Course Syllabus

Instructor: Dr. Fan Gao
Email: Fan_Gao@uttyler.edu
Office: HPC 2166
Lab location: HPC2165
Office hours: MWF 1:00 - 2:00 pm or by Appointment

Semester: fall 2008
Website:http://www.blackboard.uttyler.edu/
Lab: M 17:00 – 19:00 pm Session 001
W 14:00 – 16:00 pm Session 002

Textbook

Hall, S.J. (2006). Basic Biomechanics (5th ed.). McGraw-Hill.
Seig, K. & Adams, S. (2002). Illustrated Essentials of Musculoskeletal Anatomy. (4th ed.). Megabooks, Inc.

Course description

Laboratory and field analyses related to mechanics and musculoskeletal involvement in movement. Co-requisite: KINE 3334.

Course objectives

i. To describe the nature of vector quantities and be able to combine and resolve two-dimensional vectors.
ii. To define the basic terms involved in kinematics (e.g. velocity, acceleration, etc.)
iii. To explain the kinematic relationships between linear and angular motion
iv. To use concepts of kinematics to analyze human motion
v. To define basic terms involved in the kinetics of linear motion (e.g. force, inertia, momentum, etc.)
vi. To identify the important characteristics of forces (e.g. magnitude, direction, point of application, components)
vii. To state Newton's laws of motion and relate them to sports activities
viii. To explain the effects of significant forces encountered in biomechanical analysis
ix. To explain the significance of the impulse-momentum, work-energy and conservation of momentum relationships to sports activities
x. To describe the behavior of projectiles
xi. To define basic terms involved in the kinetics of angular motion (e.g. angular momentum, moment of inertia, torque)
xii. To locate the center of gravity of an individual
xiii. To explain the kinetic relationship between linear and angular motion
xiv. To determine the mechanical factors basic to the performance of an observed movement, and to evaluate the performer's technique

Course Requirements

A scientific calculator that can perform trigonometric functions is required for this class. Cell phones/pagers will not be allowed in tests or exams. *Attendance is mandatory for all lab sessions. The lab assignment will not be graded for the corresponding missing lab session*.

Reading Assignments

Assigned readings are limited to designated sections in the required textbook, and/or to handouts, and assignments found in the class web page (Blackboard).

Evaluation

The student will be evaluated based on the performance on lab assignments, research project report and class participation.

Grading system

Course grade will be calculated as a percentage of total possible points

Lab assignment (10)	600 pts (60pts each)
Research project	400 pts
Total possible points	**1000 pts**

Grading Scale: A+ = 97%, A = 93-96%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%

Policy on Makeup Assignments/Labs, Tests and Examinations

Makeup of missed in class assignments or tests will only be considered under the following conditions and within 3 days of the original due date:

i. *Illness.* A medical excuse with signature of a physician must be presented.
ii. *Athletic or other UT Tyler sponsored trips.* Travel dates and times with a signed memo from the supervisor must be presented to the instructor prior to the absence.
iii. *Religious Holy Days.* A holy day is observed by a religion whose places of worship are exempt from property taxation under section 11.20, Tax Code.
iv. *Extenuating circumstances.* It is the prerogative of the instructor to approve the makeup.

Note: In all of the above cases, the instructor must be notified of the absence prior to the class assignment, test, or exam.

Grade Replacement

If you are taking this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grape point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2008-2010 Catalog, p. 26)

Academic Dishonesty

Academic dishonesty is a serious offense which includes but is not limited to cheating on exams and plagiarism. The student will receive zero in this course if academic dishonesty is proven.

Food and drink in classrooms

Consumption of food and drink in university classrooms is prohibited.

Disability Support Services

If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may be obtained at the following link: http://www.uttyler.edu/disabilityservices.

Course Outline

Week 1 LAB 0: Review of Algebra and Trigonometry

Week 2 LAB 1: Linear Kinematics – Running Kinematics

Week 3 LAB 2: Projectile Motion

Week 4 LAB 3: Kinematic Relationships

Week 5 LAB 4: Linear Kinetics

Week 6 LAB 5: Rotational Kinematics

Week 7 LAB 6: Biomechanics Literature

Week 8 LAB 7: Angular Momentum

Week 9 LAB 8: Center of Mass (a.k.a. Center of Gravity) of the Body

Week 10 LAB 9: Static Strength

Week 11 LAB 10: Electromyography

Week 12-14 Research project

Week 15 Research project presentation