

ESS 376

Biomechanics of Sport and Physical Activity

Syllabus: Fall 2005

General Information

Instructor: Randy J. Schmitz, Ph.D
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Office Hours: by appointment
Class Times: T,Th: 11:00 - 12:15 a.m.

Credits: (3:3)

For whom planned:

This course is planned for undergraduate students of the ESS department

Prerequisites

BIO 271 or permission of instructor

Course Description

Anatomical and mechanical bases of physical activity with emphasis on the analysis of sport and exercise skills.

Objectives

The purpose of ESS 376 is to introduce exercise and sport science students to concepts of mechanics as they apply to human movement, particularly those pertaining to exercise, sport, and physical activity. The student should gain an understanding of the mechanical and anatomical principles that govern human motion and develop the ability to link the structure of the human body with its function from a mechanical perspective. At the completion of this course it is desired that each student be able to: 1) describe motion with precise, well-defined mechanical and anatomical terminology (SL1); 2) understand and quantify linear and angular characteristics of motion (SL2); 3) understand the quantitative relationships between angular and linear motion characteristics of a rotating body (SL3); 4) understand and quantify the cause and effect relationship between force and linear and angular motion (SL4); .5) understand the mechanics of connective tissue and injury (SL5); and 6) understand the kinetic and kinematic assessment of posture(s) (SL6).

Teaching Strategies

This course utilizes a lecture format

Required Textbook, Assigned Reading, and Other Materials

Required text (available at the UNCG Bookstore) Biomechanical Basis of Human Movement – Hamill 2nd ed:

Assigned readings: Additional readings from the biomechanics literature will be assigned for lecture and lab discussions. Readings will be available on Blackboard. Reading assignments accompanying the lectures are noted in the topical outline. Laboratory

Other required material: The following items are required for this course: 1) a calculator; and 2) the ESS 376 Course Notes package (on Blackboard).

Attendance

While attendance is not formally part of the course grading system, you are expected to attend all lecture sessions and to arrive in class at or before the designated starting time.

Evaluation

Exam 1 (SL1,2,3) (approx. week 6)	25%
Exam 2 (SL4,5,6) (approx. week 11)	25%
Weekly Quizzes (best 10)	20%
Cumulative Final Exam (SL1-6) (Tuesday, May 13, 12 noon - 3:00 p.m.)	30%

The following represents the point breakdown for assigned letter grades using a 90-80-70-60 scale.

Percentage Earned	Letter Grade
90-100%	A
80-89.99%	B
70-79.99%	C
60-69.99%	D
< 60%	F

I **DO NOT CURVE** the grades that are earned during exams, quizzes or individual assignments. Depending on the final distributions of scores, however, I *may* chose to use a plus/minus to reward those students who are especially close to the next higher letter grade (e.g., 78.5% may be either a C+ or B-). I will not *use* the plus/minus scale to lower your grade (e.g., 70.1% will be a C, not a C- or D+).

Late Penalties

All written work will have a specific due date. A 5% deduction will be made for each 24 hours (beginning at the **start** of the class period on the due date) that an assignment is turned in late (note that Monday is considered one day later than Friday). *Neither missing class nor arriving late for class on the day an assignment is due prevents you from incurring a late penalty. Once an assignment is handed back, no late assignments will be accepted.*

Exam and Quiz Format

Exams and quizzes will consist of both objective and subjective material. The objective portion of the test may include but is not limited to: Multiple Choice; True/False; True/False Correction; Matching. The subjective portion may include but is not limited to Mathematical Problems; Short Essay; Applied Analysis; Drawing and Labeling. There will be *three exams* during the fall semester (including the final). Since each class builds upon material covered in the previous class, all exams may be thought of as being comprehensive.

There will be a minimum of 7 - 10 quizzes during the semester. I will drop your lowest 2 quiz grades. Quizzes will be given during lecture and may be either announced or unannounced **AND MAY NOT BE MADE UP.**

Bonus Point Opportunities

Additional bonus points *may* be awarded for participation in various research projects in the ESS department. You will be notified of these opportunities, as they become available.

Extra Help/Tutoring Opportunities

Any student having difficulty with the material in the course is first encouraged to see me outside of class for help. I am willing to do just about anything to help you understand the material that is presented in this class. The easiest time to reach me is during my office hours but you can schedule another time if it is mutually convenient. In the event that you desire additional help, I will be happy to help you locate a tutor.

ACADEMIC HONOR CODE:

Each student is required to sign the Academic Integrity Policy on all major work submitted for the course. Refer to UNCG *Undergraduate Bulletin*.

Tentative Semester Calendar – Fall 2005

Week Of:	Lecture Topics	Assigned Readings	Problems (page #'s)	Important Things Exam dates are tentative!
Aug. 15	Introduction; Movement terminology;	Chapter 1	P25 #5-9 P26 #13,14,16,20; 15-17,20-23	Purchase book
Aug. 22	Basic mechanics; Newton's laws; Newton's law of gravitation; Mass and weight; Centric and eccentric forces; Moments,	P271-275 P351-358	P303 #2, P373 #1-4,7,9.14-16 MC 3,22	August 19, Friday – Last day to drop for tuition refund Quiz:
Aug. 29	Center of mass; Linear and angular kinematics			Quiz:
Sept. 5	Relationships between displacement, velocity, and acceleration			Quiz:
Sept. 12	Relationships between linear and angular motion			Quiz:
Sept. 9	Uniformly accelerated motion			Quiz:
Sept. 26	Uniformly accelerated motion; Long jump; Vertical jump			Exam 1
Oct. 3	Exam; Exam review			October 7, Friday – last day to drop without academic penalty
Oct. 10	Linear kinetics; Pressure No class Tuesday - Fall break			
Oct. 17	Momentum; Conservation of momentum; Impacts; Angular kinetics			Quiz:
Oct. 24	Momentum of inertia; Angular momentum;			Quiz
Oct. 31	Angular momentum; Levers			
Nov. 7	Centripetal and centrifugal forces			Quiz:
Nov. 14	Energy, work, and power; Fluid mechanics No Class Thurs - thanksgiving break			
Nov. 21	Work-energy relationship Fluid mechanics;			
Nov 28				
				Final Exam Tuesday, December 13 Noon – 3 pm

