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Annette Caldwell Simmons School of Education and Human Development
Applied Physiology and Wellness
Southern Methodist University

APSM 3322: BIOMECHANICS
COURSE SYLLABUS SPRING 2012

COURSE DESCRIPTION
This course introduces the scientific basis of support and motion in humans drawing equally on musculoskeletal biology and Newtonian mechanics. This course focuses on the effects of exercise, training status, and ergogenic aids on exercise performance in regards to support and motion.

COURSE FOCUS
This course examines the fundamental concepts related to the qualitative assessment of human movement with an emphasis on body structure, athletic performance, training and improvement, and mechanical overstresses that result in injury. A variety of basic and applied topics are covered including: assessment and modification of power, speed, strength, flexibility, body composition, and agility as well as current strategies used to improve performance.

GENERAL COURSE INFORMATION

Prerequisites: APSM 2310
Credit: 3 semester hours
Days, time, place: Tues & Thurs 11:00a – 12:20p
Simmons Hall: Room 138
Office hours: Tues 9:00a – 10:30a, Wed 12:00p – 1:30p, or by appointment

Course Tutor: Ms. Kelyn Rola, Email: krola@smu.edu, Office Phone: (214) 768-1025

REQUIRED TEXTBOOK

Hall, SJ. *Basic Biomechanics.* 6th edition, 2012. Published by McGraw-Hill.
ISBN-13: 978-0-07-337644-8

Additional required material will be provided in class and online to accompany specific lectures. Students are responsible for obtaining this information. This information will be found on the examinations.

LEARNING OBJECTIVES
After completing this course, the successful student should be able to

1. Describe the relationship between force and motion.
2. Describe how body structure and composition affect whole body movement and performance.
3. Describe how the musculoskeletal system contributes to an individuals' speed, power, strength, flexibility, and agility.
4. Develop methods to improve performance based on biomechanical concepts, ergogenic aids, and the anatomical structure of an individual.

GRADING:	Exams (3 @ 100 pts ea)	300 points
	Participation	20 points
	Quizzes (6 @ 5 pts ea)	30 points
	Homework	50 points
	Comprehensive Final Exam	100 points
	Total points available	**500 points**

Grades based on total points from 500 possible points.

94-100 (473-500 points)	= A	74-76% (368-382 points)	= C
90-93% (448-472 points)	= A-	70-73% (348-367 points)	= C-
87-89% (433-447 points)	= B+	67-69% (333-347 points)	= D+
84-86% (418-432 points)	= B	64-66% (318-332 points)	= D
80-83% (398-417 points)	= B-	60-63% (298-317 points)	= D-
77-79% (383-397 points)	= C+	< 60% (< 297 points)	= F

Your grade will be determined numerically as indicated above.

EXAMINATIONS

There are three semester exams that will be issued during the regular lecture period. These exams will only cover material presented after the previous exam. There will be a final exam issued during the university scheduled exam period. The final examination will be cumulative. Therefore, the final exam will contain information provided from the previous exam in addition to that provided throughout the semester. Lecture exams may consist of questions of several types including true/false, multiple choice (single or multiple answer), fill-in-blanks, short answer, and essay.

TARDINESS DURING EXAMS:

If a student is tardy to class during an exam, they must arrive BEFORE the first exam is completed and turned in by another class member. Any tardy student who arrives after an exam has been turned in may discuss taking an essay format make-up exam.

MAKE-UP EXAMS

Make-up exams may be scheduled if notice of an absence is given prior to the examination time. The instructor reserves the right to require documentation verifying the reason for an absence (ex: doctors note). Make-up exams must be scheduled prior to the next lecture time. There are no make-up quizzes.

ATTENDANCE POLICY:

It is the responsibility of each student to attend each lecture session for this course and to obtain and understand the material presented. The participation grade for this course is based on attendance to each lecture session. In the event of an absence due to a University sponsored activity or an officially authorized absence the participation grade for that lecture will be waived. However, students attending a university sponsored activity remain fully responsible for obtaining and learning the material. The lectures will be coordinated with the assigned readings. The text readings will provide students with a supplementary approach and perspective to the material. However, lectures will include information that is not covered within the text. Lecture packets will be available on Blackboard following each lecture.

COURSE POLICIES:

Professionalism:

Students are expected to arrive on time to lecture. Students are expected to be respectful and attentive during lectures offered by the instructor, visiting scientists, guest lecturers, or whoever may be leading a session. At all times, students are expected to act in a manner that does not interfere with the ability of the instructor to teach or fellow students to learn. Students are expected to be respectful and courteous to the instructor and fellow students.

Cell phones, PDAs, laptops and other communication devices are to remain silenced and stowed throughout the lecture and laboratory sessions. Texting and/or emailing in class are not permitted. During course meeting times, students should not be texting, studying material unrelated to Human Anatomy and Physiology, reading the newspaper, etc.

Students are responsible for checking SMU e-mail on a daily basis for messages from the university or from instructor or teaching assistant**.**

Due dates:
All assignments must be turned in at the beginning of class on the date listed in the syllabus. The score of a late assignment will be reduced by 10% per business day. Absence from class does not constitute notification of a late assignment. If an absence is unavoidable, the student is responsible for providing the assignment to the instructor on time. Computer/printer failures are not acceptable reasons for late assignments.

Quality of Work:
All written work must be printed legibly or typed. All logic and problem-solving steps must be shown for full credit.

Perceived grading errors:
Write down the question number and the text reference that validates your answer.
Bring that information to the instructor for review.
The instructor will adjust scores if a scoring error was made.
If the student is incorrect, the instructor will help the student relearn the material in question.

ACCOMMODATIONS

Disability Accommodations: Students needing academic accommodations for a disability must first be registered with Disability Accommodations & Success Strategies (DASS) to verify the disability and to establish eligibility for accommodations. Students may call 214-768-1470 or visit http://www.smu.edu/alec/dass to begin the process. Once registered students should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4.)

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

COURSE SCHEDULE

COMPREHENSIVE FINAL EXAM – Check for date and time

This syllabus is a tentative schedule. Dates and material are subject to change.

Date	Topic	Reading
1-17	Introduction to Biomechanics	Chapter 1
1-19	Kinematic Concepts and motion analysis	Chapter 2
1-24	Linear Kinematics	Chapter 10
1-26	Linear Kinematics	
1-31	Kinetic Concepts: Newton's Theories and Force	Chapter 3
2-2	Inertia, Absolute Body Size and Specialization in Sports	
2-7	Acceleration, Absolute Body Size and Specialization in Sports	
2-9	Acceleration, Absolute Body Size and Talent Identification	
2-14	**Exam I**	
2-16	Biomechanics of Bone growth and development	Chapter 4
2-21	Biomechanics of Bone growth and development	
2-23	Skeletal muscle articulations: Tendons and Ligaments	
2-28	Skeletal muscle articulations: Tendons and Ligaments	Chapter 5
3-1	Flexibility	
3-6	Bone and Joint related Injuries and Performance	
3-8	**Exam II**	
3-13	**Spring Break**	
3-15	**Spring Break**	
3-20	The Biomechanics of Human Skeletal Muscle	Chapter 6
3-22	The Biomechanics of Human Skeletal Muscle	
3-27	Strength and Power	
3-29	Work Energy and Power	Chapter 12
4-3	Body Composition and Sport	
4-5	**Exam III**	
4-10	Friction	Chapter 12
4-12	Aero and Hydrodynamics	
4-17	Center of mass, balance and Agility	Chapter 13
4-19	Center of mass, balance and Agility	
4-24	Impulse momentum and concussions	
4-26	**No Class**	
5-1	Applied Biomechanics for Sports Performance	
TBD	**Final Examination**	