

Department of Kinesiology
California State University, Northridge
18111 Nordhoff Street
Northridge, CA 91330-8287

KIN 345 – BIOMECHANICS

Course Information:

Units: 3
Semester/Year: Spring
Location: RE 155
Time: TR 12:30-1:45
Prerequisites: Bio 211/212 or
Bio 275 or KIN 300
Course web page: <http://www.csun.edu/~sflanagan/KIN337.htm>
Course E-mail: sp08.kin345.01-c@csun.edu

Instructor Information:

Instructor: Sean P. Flanagan, PhD, ATC, CSCS
Office: RE 261
Phone: 818-677-7507
E-mail: sean.flanagan@csun.edu
Office Hours: T 10:00 –11:00; R 2:00 –3:00
F 12:00 – 1:00; By appointment

Course Description:

Biomechanical analysis of human movement based on anatomical concepts and mechanical laws of motion.

Departmental Learning Outcomes:

The Department of Kinesiology has six Student Learning Outcomes (SLOs):

1. Demonstrate an understanding of the multi-disciplinary and integrated nature of kinesiology.
2. Apply, integrate and communicate kinesiological principles and movement-related knowledge across diverse settings and populations to enhance quality of life and encourage adoption of healthy lifestyles.
3. Apply innovative technology to understand and enhance human movement.
4. Demonstrate commitment to professional growth.
5. Demonstrate reasoning, problem solving, critical thinking, and reflective strategies in the pursuit and application of movement related knowledge.
6. Develop and apply assessment tools to measure and evaluate movement program efficacy.

SLOs are aligned with the following Course Objectives as indicated in brackets [SLO #].

Course Objectives:

To provide students with the knowledge and skills to be able to:

1. Apply mechanical laws and principles of applied physics to anatomical structures [SLO #2, 5].
2. Describe how musculoskeletal structures influence human movement [SLO #2].
3. Apply kinematic & kinetic descriptors and measures to human movements [SLO #2, 5].
4. Analyze the biomechanical correlates of specific skills and techniques [SLO #2, 5].
5. Analyze selected injury and performance mechanisms [SLO #2, 5].
6. Assess movement patterns characteristic of special populations, including individuals with disabilities, throughout the lifespan [SLO #2, 3].

Required Textbooks:

Hall, S.J. (2007). *Basic Biomechanics (5th ed.)*, Boston, MA: McGraw Hill.

Biomechanics Lab Manual (purchase at QuickCopies in Bookstore)

Grading:

1. Written exams (3 @ 100 points each)
2. Final Exam (1 @ 150 points each)
3. Total = 450 points

Grading Scale:

	B+	391-404	C+	346-359	D+	301-314		
A	418-450	B	373-390	C	328-345	D	283-300	F ≤ 269
A-	405-417	B-	360-372	C-	315-327	D-	270-282	

Requests for an Incomplete (I) must confirm to university policies. Among other requirements, "I" is possible only for instances in which a student is demonstrating passing work in the class.

Examination Policies:

1. Any material covered in class, in the corresponding text chapters, or from other assignments is testable on the exam.
2. Students will **not** be allowed to leave the room during exams. Please attend to any personal needs before the exam.
3. Make-up exams will be considered only under exceptional circumstances. (Note: "I overslept", "I'm tired", "I'm not prepared", etc. are **not** exceptional circumstances!) Any student who fails to contact the instructor *prior* to any

- missed exam may **not** be allowed to makeup the exam.
4. Absence for medical reasons requires *written* verification by a physician.
 5. Exams will **not** be rescheduled based on a student's personal work/school schedule. Please plan ahead.
 6. Questions/concerns regarding grading for any exam must be resolved with the instructor within **one week** of the date graded exams are returned to the student.

Assignments:

Four take-home assignments will be given out during the semester. The nature and due date of those assignments will be discussed in class. Points will be deducted for late assignments.

Attendance Policy:

Attendance is not mandatory for this class, but each student is responsible for all material covered along with any changes to the syllabus that are discussed in class. Any foreseeable absences should be discussed with the professor beforehand. If an emergency arises, telephone or email me before class so that I have a record of the absence. If I do not receive any prior notification, I will not allow make-ups for any material missed (i.e., exams).

Students with Disabilities:

The instructor, in conjunction with California State University Northridge, is committed to upholding and maintaining all aspects of the federal Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. If you are a student with a disability and wish to request accommodations, please contact the office of Students with Disabilities Resources located in 110 Student Services Building, or call 818-677-2684 for an appointment. Any information regarding your disability will remain confidential. Because many accommodations require early planning, requests for accommodation must be made within the first two weeks of class. Any requests for accommodation will be reviewed in a timely manner to determine their appropriateness to this setting. You must be registered with the office of Students with Disabilities Resources in order to request an accommodation.

Plagiarism and Cheating:

Any student caught cheating on an exam or laboratory assignment will automatically fail the course, and may be subject to more severe University discipline. Please refer to the California Code of Regulations, Section 41301, Title 5 as found in the university catalog.

Schedule:

DATE	TOPIC	READINGS
1-22-08	Introduction	1
1-24-08	Linear Kinematics	2 & 10
1-29-08		
1-31-08		
2-05-08	Linear Kinetics	2 & 12
2-07-08		
2-12-08		
2-14-08	Work-Energy	12
2-19-09	EXAM #1	
2-21-08	Angular Kinematics	11
2-26-08		
2-28-08	Angular Kinetics	14
3-04-08		
3-06-08		
3-11-08	Muscle Mechanics	6
3-13-08		
3-18-08	SPRING BREAK	
3-20-08		
3-25-08	Review	
3-27-08	EXAM #2	
4-01-08	Lower Extremity Mechanics	8
4-03-08		
4-08-08	Upper Extremity Mechanics	7
4-10-08		
4-15-08	Mechanics of the Trunk	9
4-17-08		
4-22-08	EXAM #3	
4-24-08	Fluid Mechanics	15
4-29-08		
5-01-08	Injury Biomechanics	
5-06-07		
5-08-08	Review	
Exam Week	EXAM #4	

Schedule is subject to change, with appropriate notice, as circumstances and opportunities dictate. Written final exam will be administered according to the university schedule. Students are responsible for staying updated to the changes of the schedule from classroom announcements.