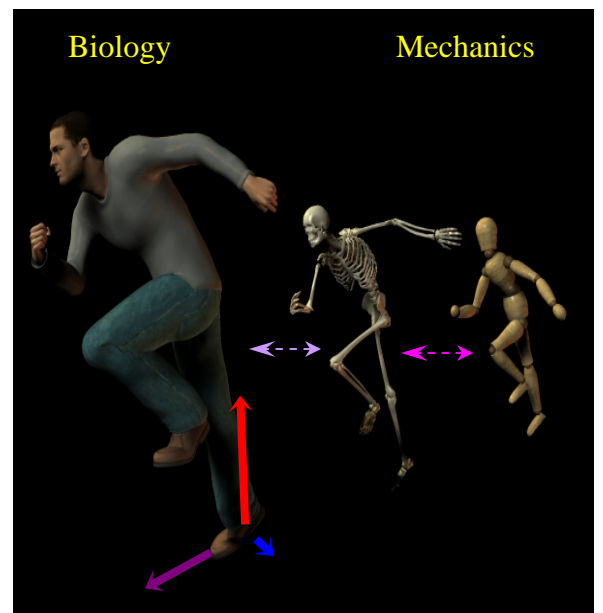


UTAH STATE UNIVERSITY

Department of Health, Physical Education, and Recreation
Biomechanics, PEP 4200 (4 credits)

Welcome to Biomechanics! Biomechanics is an integral part of any career that applies the principles of kinesiology (study of human movement). Biomechanics is unique from other fields in our profession, in that it allows for an appreciation of the “why.” That is, an understanding of basic biomechanics allows you to explain ‘why’ some techniques are better than others when it comes to performance, rehabilitation, and injury prevention. This is contrast to other fields that help you understand ‘which’ techniques to use and ‘how’ to perform them. I think you will find biomechanics to be a powerful tool that you will use throughout your life to improve, maintain, or recapture performance, health, and wellness.



Instructor: Dr. Eadric Bressel

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Office: HPER building, room 148

Office Hours: By appointment

Prerequisites: Bio 2000, Bio 2010, and Math 1050

- I. **Course Description:** Introduction and application of human functional anatomy and biomechanical principles important to human movement. In lab, students will experience hands-on application of principles of functional anatomy and biomechanics.
- II. **Online Technologies:** E-mail, WebCT, and Lecture MP3/IPOD downloads
- III. **Required Materials:**
 - A. Hall, S. J. (2007). *Basic Biomechanics* (5th ed). Dubuque, IA: WCB/McGraw-Hill.
 - B. Supplementary hand-outs and lab assignments (available in lecture)

- IV. **Course Objectives:** At the completion of this course, students should be able to:
- A. Demonstrate an understanding of basic anatomical terminology.
 - B. Demonstrate an understanding of basic functional anatomy.
 - 1. Identify bones, bony landmarks, skeletal articulations, and their biomechanical properties.
 - 2. Identify possible movements that take place at joints.
 - 3. Identify muscles, muscle attachment sites, resulting muscular actions, and their biomechanical properties.
 - C. Define and apply basic biomechanical concepts to human movement situations.
 - D. Describe anatomical and biomechanical factors that influence muscle force production.
 - E. Define and apply kinematic and kinetic measures to linear and angular human motion in order to quantify various aspects of movement.
 - F. Define torque and discuss why it is a measure of human strength.
 - G. Identify the factors that influence torque production in the intact musculoskeletal system.
 - H. Describe the components of a qualitative analysis of human movement.

V. **Evaluation:**

A. Exams:			
	Exam 1	80	points
	Exam 2	75	points
	Exam 3	75	points
	Exam 4	80	points
B. Laboratory:		120	points
C. Introductory problems		0	points
D. Assignments		35	points
E. Term paper		35	points

Points possible.....500 points

VI. Description of evaluation components:

- A. **Exams:** There are 4 lecture exams that will not be timed, multiple choice, fill-in-the-blank, and short answer formats. None of the exams will be comprehensive (yea!).
- B. **Laboratory:** The laboratory is meant to give you hands-on experiences in applying the concepts presented in the course content sections. The lab is worth about 25% of your grade and will require you to complete nine different laboratory assignments and two quizzes. Details will be given during your first laboratory activity.
- C. **Introductory Problems:** At the end of each chapter in your text book there are introductory problems that help you appreciate the information presented. The answers to most questions are provided and therefore you are encouraged to complete these problems but you will not turn in your answers. I would also encourage you to complete the “Sample Problems” which are found within the text of each chapter.
- D. **Assignments:** There are 4 assignments. The 4 assignments reinforce and apply key principles from the content presented. The course outline indicates their due date.
- E. **Term Paper:** This semester you will be asked to research a topic that involves biomechanics. You will prepare a short abstract that describes your research topic. The details for the project will be presented in lab. The term paper will be due July 6th as indicated on the outline.

VII. Grading Scale:

A	463-500 points	A-	448-462 points		
B+	428-447 points	B	413-427 points	B-	398-412 points
C+	378-397 points	C	363-377 points	C-	348-362 points
D+	328-347 points	D	298-327 points		
F	< 297 points				

VIII. General Information:

- A. **Academic honesty policy:** USU’s policies and recommendations for academic honesty will be followed (see page 41 of general catalog 2006-2007). Plagiarism will result in no credit for the given assignment. Late assignments will result in dropping a letter grade for that assignment.
- B. **Notice on lab fees (\$15):** As part of your registration for this class, you were required to pay a “lab fee.” This fee is used to buy and maintain software used create lab activities. All of the fees are used to enhance your learning opportunities in this course.
- C. **Special Needs:** If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center. In cooperation with

the Disability Resources course, material will be provided in alternative formats such as large print, audio diskette, or Braille

D. A. Source Guides (Journals):

Journal of Biomechanics

Journal of Applied Biomechanics

Journal of Electromyography and Kinesiology

Medicine and Science in Sports and Exercise

American Journal of Sports Medicine

Journal of Orthopaedic & Sports Physical Therapy

Ergonomics