FACULTY **C**OURSE **A**SSESSMENT **R**EPORT

Department of Biomedical Engineering

Academic Year: **2011-2012**
Term: **Winter 2012**

Course Code and Title: **14035 BME110B Biomechanics**
BME major

Instructor: **James P. Brody, PhD**

Background: Please review the *ABET background* document.

Instructions: For each student outcome performance indicator, identify (1) the assignment (which quiz, quiz problem, exam problem, or project) was used to assess that indicator, (2) the maximum score possible on that assignment, (3) the performance standard for that assignment expressed in points and also as a percentage of max, (4) the number of students who were assessed on that assignment, (5) the average score achieved by them expressed in points and percentage of max, and (6) the number and percentage of BME students who achieved the performance standard.

Performance Indicators (PIs): This course assesses the following Performance Indicators (please consult the *Proposed Remapping of BME courses to Student Outcomes* document): **a1, a3.**

a1 — Students can apply knowledge of mathematics to problems in Biomedical Engineering
a3 — Students can apply knowledge of engineering to problems in Biomedical Engineering.

PIs	Assignment used for assessment	Max. score	PI standard and % of maximum	Number of students tested	Average score and % of maximum	Number and % of BME students who met the standard
(a1)	Final Exam (a), Problem 5	20	**14 (70% of max)**	47	**10.9**	**21/47 (45%)**
(a3)	Final Exam (b), Problem 5	15	**10.5 (70% of max)**	28	**9.5**	**24/28(86%)**

Course Learning Outcomes: This course assesses the following Course Learning Outcomes (please consult your *Course Outline* document):

CLO1: Students will be able to determine the velocity and acceleration by integration of the equation of motion (a)
CLO2: Students will be able to apply Newton's second law to determine the equation of motion. (a).
CLO3: Students will be able to calculate the work of a force exerted by a spring (a).
CLO4: Students will be able to calculate the kinetic energy of a particle. (a).
CLO5: Students will be able to calculate the angular momentum of a system of particles (a).
CLO6: Students will be able to calculate the tangential and normal components of acceleration of rotating slab (a).
CLO7: Students will be able to derive the equation of motion for bodies in constrained plane motions (a).
CLO8: Students will be able to apply the principle of conservation of energy to solve the equations of motion after a collision (a).
CLO9: Students will be able to use a rotating frame to write the equations of motion of a rigid body in space (a).

CLOs	Assignment used for assessment	Performance standard	Number of students tested	Average score	Number and % of BME students who met the standard
1	Final Exam B, #5	70%	28	9.5	24/28 (76%)
2	Final Exam A, #5	70%	47	10.9	**21/47(45%)**
3	Final Exam B, #4	70%	28	11.9	26/28(93%)
4	Final Exam A, #3	70%	47	13.7	41/47(81%)
5	Not assessed	70%			
6	Not assessed	70%			
7	Not assessed	70%			
8	Final Exam A, #2	70%	47	19.1	44/47(94%)
9	Final Exam A&B, #6	70%	74	11.0	46/74(62%)

What changes did you make in this course based on previous assessment results?

I kept the lectures more interactive.

I gave a standardized assessment test (Force Concept Inventory) to the class on the first day and, again, in the last week. This is used to measure the improvement in conceptual understanding that students made during the course.

What recommendations do you have for improving the course the next time it is taught?

Add a lecture/problem set involving numerical solution to problems.

What recommendations do you have, if any, regarding prerequisite courses or other ways to improve student preparation for this course?

Any other recommendations or comments?

No