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

Department of Biomedical Engineering

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

Course Code and Title: **BME150 Biotransport Phenomena**

Instructor: **Steven C. George, MD, 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, e2.**

a1 — Students can apply knowledge of mathematics to problems in Biomedical Engineering
a3 — Students can apply knowledge of engineering to problems in Biomedical Engineering.
e2 — Students can develop a solution to biomedical engineering problems.

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)	Midterm#1 (all)	100	28.5 (28.5%)	69	39.6 (39.6%)	57 (83%)
	Midterm#2 (all)	100	24.6 (24.6%)	69	36.7 (36.7%)	57 (83%)
	Final Exam (all)	100	28.0 (28.0%)	69	42.4 (42.4%)	57 (83%)
	Average:				39.6%	83%
(a3)	Midterm#1 (all)	100	28.5 (28.5%)	69	39.6 (39.6%)	57 (83%)
	Midterm#2 (all)	100	24.6 (24.6%)	69	36.7 (36.7%)	57 (83%)
	Final Exam (all)	100	28.0 (28.0%)	69	42.4 (42.4%)	57 (83%)
	Average:				39.6	83%
(e2)	Midterm#2 (II and III)	70	17.2 (24.6%)	69	25.7 (36.7%)	57 (83%)
	Final Exam (III)	30	8.4 (28.0%)	69	12.7 (42.4%)	57 (83%)
	Average:				39.6%	83%

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

CLO1: Students will demonstrate an understanding of conservation of mass and energy **(a,e)**.
CLO2: Students will demonstrate an understanding of constitutive laws that describe energy and mass flux **(a,e)**.
CLO3: Students will demonstrate and understanding of the fundamental mechanisms of energy and mass transport (diffusion and forced convection) **(a,e)**.

CLO4: Students will demonstrate the skill to apply conservation and constitutive laws of energy and mass to quantitatively characterize mass and energy flux in biological/biomedical systems **(a,e)**.

CLOs	Assignment used for assessment	Performance standard	Number of students tested	Average score (%)	Number and % of BME students who met the standard
1	Midterm#1 (all)	28.5 (28.5%)	69	39.6	57 (83%)
	Midterm#2 (all)	24.6 (24.6%)	69	36.7	57 (83%)
	Final Exam (all)	28.0 (28.0%)	69	42.4	57 (83%)
2	Midterm#1 (all)	28.5 (28.5%)	69	39.6	57 (83%)
	Midterm#2 (all)	24.6 (24.6%)	69	36.7	57 (83%)
	Final Exam (all)	28.0 (28.0%)	69	42.4	57 (83%)
3	Midterm#1 (all)	28.5 (28.5%)	69	39.6	57 (83%)
	Midterm#2 (all)	24.6 (24.6%)	69	36.7	57 (83%)
	Final Exam (all)	28.0 (28.0%)	69	42.4	57 (83%)
4	Midterm#1 (all)	28.5 (28.5%)	69	39.6	57 (83%)
	Midterm#2 (all)	24.6 (24.6%)	69	36.7	57 (83%)
	Final Exam (all)	28.0 (28.0%)	69	42.4	57 (83%)

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

This was the first time that instructor taught this course.

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

Based on feedback from the course evaluation, I will make two changes to the course:
1. replace the textbook, with a new text that more closely covers the material in the format covered in the lecture. The new textbook is likely to be Fundamental so Heat, Mass, and Momentum Transfer by Welty, Wicks, and Wilson.
2. Shorten the length of the midterm exams.

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

The course would be improved if BME110C (fluid and solid mechanics) were a pre-requisite or co-requisite. Most, if not all, of the BME students were taking BME110C co-currently, and the delivery of the material and ability to understand the material would be easier if the BME-Premed students also had an understanding of fluid mechanics.

Any other recommendations or comments?

No