

## FACULTY COURSE ASSESSMENT REPORT

### Department of Biomedical Engineering

Academic Year: 2012-2013

Term: Spring 2013

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
<b>(a1)</b>	Midterm#1 (II and III)	70	17.5 (25%)	105	24.5 (35.0%)	98 (93%)
	Midterm#2 (II and III)	70	17.5 (25%)	105	23.1 (33.0%)	90 (86%)
	Final Exam	-	-	-	-	-
	<b>Average:</b>				34%	83%
<b>(a3)</b>	Midterm#1 (all)	100	25 (25%)	105	40.0 (40.0%)	98 (93%)
	Midterm#2 (all)	100	25 (25%)	105	37.6 (37.6%)	90 (86%)
	Final Exam	-	-	-	-	-
	<b>Average:</b>				38.8%	89%
<b>(e2)</b>	Midterm#2 (II and III)	70	17.2 (24.6%)	105	25.7 (36.7%)	90 (86%)
	Final Exam	-	-	-	-	-
	<b>Average:</b>				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
<b>1</b>	Midterm#1 (all)	25 (25%)	105	40.0	98 (93%)
	Midterm#2 (all)	25 (25%)	105	37.6	90 (86%)
	Final Exam (all)	-	105	-	-
<b>2</b>	Midterm#1 (all)	25 (25%)	105	40.0	98 (93%)
	Midterm#2 (all)	25 (25%)	105	37.6	90 (86%)
	Final Exam (all)	-	105	-	-
<b>3</b>	Midterm#1 (all)	25 (25%)	105	40.0	98 (93%)
	Midterm#2 (all)	25 (25%)	105	37.6	90 (86%)
	Final Exam (all)	-	105	-	-
<b>4</b>	Midterm#1 (II and III)	17.5 (25%)	105	27.7	98 (93%)
	Midterm#2 (II and III)	17.5 (25%)	105	25.7	90 (86%)
	Final Exam	-	-	-	-

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

The length of the midterm exams was shortened, although the students still struggled to complete. I opted not to change the textbook in the second year and wait for additional feedback from the students. I believe the current text presents material in a different fashion than my lecture notes and there is some advantage in the overall learning process to this approach.

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

Do have any specific feedback at this time.

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