

# FACULTY COURSE ASSESSMENT REPORT

## Department of Biomedical Engineering

Academic Year: **2011-2012**

Term: **Winter 2012**

Course Code and Title: **BME121 Quantitative Physiology: Organ  
Transport Systems**

Instructor: **Jered B. Haun, Ph.D.**

**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): **a2, d1, d2, d3, d4, i1.**

a2 — Students can apply knowledge of science to problems in Biomedical Engineering.

d1 — Students understand team and project objectives.

d2 — Students combine skills and methods from different disciplines.

d3 — Students participate in team activities.

d4 — Students complete assigned duties.

i1 — Students can access resources to solve open-ended biomedical 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>(a2)</b>	HW#1 (all)	100	50.00 (50.00%)	75	57.20 (57.20%)	50 (66.67%)
	HW#2 (all)	100	50.00 (50.00%)	75	46.93 (46.93%)	47 (62.67%)
	HW#3 (all)	100	50.00 (50.00%)	75	64.80 (64.80%)	59 (78.67%)
	HW#4 (all)	100	50.00 (50.00%)	75	80.47 (80.47%)	65 (86.67%)
	Midterm (all)	100	50.00 (50.00%)	75	47.06 (47.06%)	32 (42.67%)
	Final (all)	100	50.00 (50.00%)	75	55.68 (55.68%)	51 (68.00%)
	<b>Average:</b>				<b>(58.69%)</b>	<b>50.67 (67.56%)</b>
<b>(d1)</b>	Written report#1	50	40.00 (80.00%)	75	40.29 (80.59%)	50 (66.67%)
	Written report #2	50	40.00 (80.00%)	75	41.67 (83.34%)	54 (72.00%)
	<b>Average:</b>				<b>(81.96%)</b>	<b>52 (69.33%)</b>
<b>(d2)</b>	Written report#1	50	40.00 (80.00%)	75	40.29 (80.59%)	50 (66.67%)
	Written report#2	50	40.00 (80.00%)	75	41.67 (83.34%)	54 (72.00%)
	<b>Average:</b>				<b>(81.96%)</b>	<b>52 (69.33%)</b>
<b>(d3)</b>	Written report#1	50	40.00 (80.00%)	75	40.29 (80.59%)	50 (66.67%)
	Written report#2	50	40.00 (80.00%)	75	41.67 (83.34%)	54 (72.00%)
	<b>Average:</b>				<b>(81.96%)</b>	<b>52 (69.33%)</b>

<b>(d4)</b>	Participation Score for Written reports <b>Average:</b>	100	80.00 (80.00%)	75	81.59 (81.59%) <b>(81.59%)</b>	49 (65.33%) <b>49 (65.33%)</b>
<b>(i1)</b>	Written report#1 Written report#2 <b>Average:</b>	50 50	40.00 (80.00%) 40.00 (80.00%)	75 75	40.29 (80.59%) 41.67 (83.34%) <b>(81.96%)</b>	50 (66.67%) 54 (72.00%) <b>52 (69.33%)</b>

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

**CLO1:** Describe and identify basic anatomical features of the pulmonary and cardiovascular systems **(a)**.

**CLO2:** Describe both qualitatively and quantitatively the fundamental physiological functions of the pulmonary and cardiovascular systems **(a)**.

**CLO3:** Perform fundamental mass balances as applied to physiological systems, and solve the resulting first and second order differential equations **(a)**.

**CLO4:** Apply knowledge of anatomy and physiology of the pulmonary and cardiovascular systems together with basic engineering principles to design solutions to current biomedical problems **(a, i)**.

**CLO5:** Formulate strategies in multidisciplinary teams to address current biomedical problems using information and resources from outside of the classroom environment **(a, d, i)**.

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>	HW#1-4, Midterm, Final Exam	50.00%	75	58.69%	50.67 (67.56%)
<b>2</b>	HW#1-4, Midterm, Final Exam	50.00%	75	58.69%	50.67 (67.56%)
<b>3</b>	HW#1-4, Midterm, Final Exam	50.00%	75	58.69%	50.67 (67.56%)
<b>4</b>	Written reports#1-2	80.00%	75	81.96%	52.00 (69.33%)
<b>5</b>	Written reports#1-2	80.00%	75	81.96%	52.00 (69.33%)

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

This was my first time teaching the course. A major change that was implemented from previous years was moving the format to powerpoint slides so that lectures could be recorded and uploaded online as a podcast.

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

Go over more example problems class, particularly during discussion sessions that had exclusively been used for group planning sessions for the written reports.  
Balance podcast-based lectures, which work well for conveying information such as basic anatomy, with traditional chalk board-based lectures that are better for solving problems.  
Use randomized seating assignment during midterms and exams to minimize the effect of cheating.

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

Based on recommendations from Undergraduate Committee, a new course series BME60 A-C will be added as a prerequisite for BME121 in the future that will provide students with formal training in Matlab and other computer programs. This will provide new opportunities for homework assignments.

Any other recommendations or comments?

None