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

Department of Biomedical Engineering

Academic Year: **2012-2013**
Term: **Spring 2013**

Course Code and Title: **BME111 Design of Biomaterials**

Instructor: **Wendy Liu**

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, c1**

a2 — Students can apply knowledge of science to problems in Biomedical Engineering
c1 — Students can design a biomedical system to meet desired needs within realistic constraints

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
(a2)	HW#1 (all)	10	6.67 (66.7%)	102	9.5 (95%)	**99 (97%)**
	HW#2 (all)	10	6.67 (66.7%)	102	8.8 (88%)	**90 (88%)**
	HW#3 (all)	10	6.67 (66.7%)	102	7.9 (79%)	**71 (89%)**
	HW#4 (all)	10	6.67 (66.7%)	102	6.9 (69%)	**72 (70%)**
	Midterm 1 (all)	56	37 (66.7%)	102	47.3(85%)	**98 (96%)**
	Midterm 2 (all)	100	66.67 (66.7%)	102	76.2 (76%)	**79 (77%)**
	Average:				88%	**88 (88%)**
(c1)	Reading #1 (all)	25	16.67 (66.67%)	102	88.6%	**96 (94%)**
	Average:					

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

- **CLO1**: Students will be able to select appropriate class of materials using knowledge of different materials properties (EAC a).
- **CLO2**: Students will be able to design an implant material, component, or process to meet desired needs (EAC a,c).
- **CLO3**: Students will be able to identify, formulate, and solve materials selection and surface engineering problems (EAC a).

CLO4: Students will be able to identify materials properties, apply fundamental analytical tools, and predict performance (EAC a).

CLOs	Assignment used for assessment	Performance standard	Number of students tested	Average score (%)	Number and % of BME students who met the standard
1	HW#1-4,Midterm#1-2, Critical Reading Assignment 1	66.67%	102	83.5	89 (88%)
2	HW#1-4,Midterm#1-2, Critical Reading Assignment 1	66.67%	102	83.5	89 (88%)
3	HW#1-4,Midterm#1-2, Critical Reading Assignment 1	66.67%	102	83.5	89 (88%)
4	HW#1-4,Midterm#1-2, Critical Reading Assignment 1	66.67%	102	83.5	89 (88%)

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

The project from last year was eliminated in exchange for literature reading assignments. Students were assigned readings from the literature related to the development of new biomaterials, and asked questions to assess their critical reading skills. In addition, they used the information that they learned to design new materials and experiments to test materials. These assignments encouraged independent learning. In addition, use of old exams as practice problems to prepare students for the midterm and final exams was very helpful.

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

3D models would be helpful to demonstrate many aspects of the molecular structure of materials. The class is a mix of juniors and sophomores, and as such, it often becomes difficult to tailor the class to students with varied levels of background.

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

It is recommended upon the suggestion of the Undergraduate Committee that BME 50B be changed from a corequisite to a prerequisite, so that all students have a similar understanding of cell biology and immunology prior to taking this course.

It is also recommended that BME 110A be added as a prerequisite to this course, so that all of the students have had similar level of mechanics prior to being taught mechanics of biomaterials.

Any other recommendations or comments?

No