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

Department of Biomedical Engineering

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

Course Code and Title: **BME130 Biomedical Signals and Systems**

Instructor: **Zoran Nenadic, DSc**

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, k2.**

a1 — Students can apply knowledge of mathematics to problems in Biomedical Engineering
k2 — Use software tools to model biomedical systems, and analyze and interpret biomedical data.

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 (all)	100	66.67 (66.67%)	94	74.43 (74.43%)	69 (73.40%)
(k2)	HW#8 (all)	100	66.67 (66.67%)	94	68.26 (68.26%)	68 (72.34%)

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

CLO1: Students will be able to understand the nature of common biomedical signals **(a,k)**.
CLO2: Students will be able to apply the essential techniques for analyzing analog and digital biomedical signals **(a,k)**.
CLO3: Students will be able to analyze linear time invariant systems **(a,k)**.
CLO4: Students will be able to develop computing skills by using MATLAB for signal analysis and system modeling **(k)**.

CLOs	Assignment used for assessment	Performance standard	Number of students tested	Average score (%)	Number and % of BME students who met the standard
1	HW#8, Final Exam	66.67%	94	71.35%	68.50 (72.87%)
2	HW#8, Final Exam	66.67%	94	71.35%	68.50 (72.87%)
3	HW#8, Final Exam	66.67%	94	71.35%	68.50 (72.87%)
4	HW#8	66.67%	94	68.26%	68 (72.34%)

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

Streamlined the assessment of outcomes (a) and (k); a1 and k2 are solely assessed based on Final Exam and HW#8.
HW#8 changed so that it is completely based on MATLAB, with examples of both BME signals and systems.
Created more examples (midterms and final) with biomedical relevance.
Skipped the lecture on differential equations since this topic is a prerequisite.
Reduced the weighing of the homework assignments on the final grade (from 30% to 20%).
Increased the weighing of the midterms from 20% to 25%, for a total of 50%.

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

Create additional exercises to be covered by teaching assistants during discussion sessions.
Revise and expand MATLAB tutorials.
Based on students comments, spend less time on introductory lectures and topics, and slow down as the course moves along.
Use a tablet PC for real-real time annotations and derivations.

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 BME60C is in the process of being added as a prerequisite for BME130.

Any other recommendations or comments?

No