BME 687: MEDICAL INSTRUMENTATION- Spring 2012

Lectures:	Tuesdays 1:00-3:55pm, Fenster Hall 640		
Instructor:	Mesut Sahin, PhD	Office: Fenster Hall, Room 617	Email: sahin@njit.edu
Phone:	(973) 596-5573		
Office hours:	11am-1pm on Mondays or Tuesdays or by appointment		

Textbook:

John G. Webster, Medical Instrumentation Application and Design, Fourth Edition. John Wiley & Sons, Inc. New York. ISBN-10: 9780471676003 or ISBN-13: 9780471676003

Other References:

- Douglas Christensen, Introduction to Biomedical Engineering Part II, 2009, ISBN: 9781598298444, www.morganclaypool.com,
- John Enderle, Bioinstrumentation, 2007, ISBN: 9781598291322, www.morganclaypool.com
- L.A. Geddes and L.E. Baker, Principles of Applied Biomedical Instrumentation, Third Edition. John Wiley & Sons, Inc. New York, 1989. ISBN: 0-471-60899-8
- Willis J. Tompkins, Biomedical Digital Signal Processing, Prentice Hall Inc., New Jersey,1995,ISBN:0-13-067216-5.
- J. Enderle, S. Blanchard, and J. Bronzino, Introduction to Biomedical Engineering, second edition, Elsevier, ISBN-13: 978-0-12-238662-6
- National Semiconductor's website: (www.nationalsemiconductor.com) > Application Notes > Analog

Course Description:

Suggested Prerequisites: Undergraduate courses in circuit analysis and electronic circuits, and knowledge of basic op-amp circuits. Topics covered are principles of biomedical sensors, AC and DC characteristics of biopotential amplifiers and electrodes, noise and signal contamination in recordings of biopotentials, and the use of computers for biomedical signal acquisition and processing in Matlab. Studio experiments are designed to provide hands-on experience on the major topics covered in the lectures.

Course Objectives:

1. Learn the principles of operations for various kinds of biomedical sensors
2. Develop the skills to design and build bio-potential amplifiers and other electronic hardware to process the biomedical signals
3. Learn the origin of bio-potentials and the electrodes needed to acquire them
4. Acquire the skills to collect biomedical signals into a computer and analyze them using Matlab

Homeworks must be returned on the due date. There will be penalty for late submissions (5 points per day).

Studio Reports are due in one week from the day that the experiment is completed. A template will be provided for the studio reports by the instructor.

Term Project is designed for you to gain an in-depth knowledge of a specific subject in biomedical instrumentation. A list of topics will be provided by the instructor for you to pick from. You may choose a topic on your own with the consent of the instructor.

Attendance: You need to come to each class to keep up with the material. Read through the previous hour's material before coming to the class.

Academic Dishonesty: In accordance with the Academic Honor Code, an evidence of cheating may result in an "F" grade in this course.

Disability: Students needing testing or classroom accommodations based on a disability are encouraged to discuss those needs with the instructor as soon as possible.

Class Grading:	
Midterm:	15%
Final:	20%
Lab Reports:	30%
Homework:	15%
Term Project:	15%
Class Participation	5%

Important Notes:

1. Lab reports and the term project report should be typed. Handwritten homework is acceptable, however, write legibly!!!

2. The quickest way for you to reach the instructor for any reason is via e-mail.

3. Check your email every day for announcements from the instructor as a part of this class.