EEE 4202C - MEDICAL INSTRUMENTATION
Fall 2013

Instructor	:	Dr. Herman Watson
Office Hours	:	by appointment Tuesday 9:30 am -11:00 am Tuesday & Thursday 3:30 – 5:00 pm
Office	:	EC - 3951
Phone (Sec)	:	305.348.2807 (Electrical Engineering)
Classroom Time		
	:	Lecture - T, Th - EC2410 11:00 am - 12:15 pm
	:	Lab times are arranged on student personal schedule
Email	:	watsonh_fiu@yahoo.com (Note underscore)
Web Page	:	http://web.eng.fiu.edu/watsonh/

Textbook:
Medical Instrumentation: Application and Design, 4/E, John G. Webster, Editor, John Wiley & Sons, Inc., 2009

Course Objectives:

A student who completes this course will have learned:

1. Operating principles of medical sensors, transducers and bio-electrodes
2. Basic physiology and anatomy as applied to medical instrumentation
3. Clinical terminology
4. How to apply engineering systems modeling theory to medical instrumentation
5. How to design basic circuitry to process bio-signals
6. Electrical safety for medical instrumentation
7. How to apply these concepts to design and build a medical instrumentation system

Topics Covered:

Bio-Sensors
Bio-Electrodes and Amplifiers
Blood Pressure and Flow
Respiratory System
Electrical Safety

Relationship of course to program outcomes:

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function on multi-disciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
i) a recognition of the need for, and an ability to engage in life-long learning

Contribution of course to meeting the professional component:
Engineering Science
Engineering Design

Grading Scale:	
A	92-100
A-	90-92
B+	88-90
B	82-88
B-	80-82
C+	78-80
C	72-78
C-	70-72
D+	68-70
D	62-68
D-	60-62
F	< 60

Department Regulations Concerning Incomplete Grades
To qualify for an incomplete, a student:

1. Must contact the instructor before or during missed portion of class
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. All missed work must be finished before last two weeks of the following term.

Policies:

- **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
- **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (**1 point** per absence above two**, 3 points** per absence above 5).
- **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation you are **required to email** a description of the excuse and absence dates as a written record to watsonh_fiu@yahoo.
- **On Time:** As in the workplace, on time arrival and preparation are required. Two "lates" are equivalent to one absence. (Leaving class early is counted the same as tardy.)
- **Deadlines:** Assignments are due at the beginning of the class period on the date specified. Assignments submitted late (within 1 week) will receive **half credit. After one week assignments will not be accepted.**
- **DO NOT** send assignments by email.
- Instructor reserves right to change course materials or dates as necessary.

	Grading Points Distribution
Topic	**Percentage**
Exam #1	30% ***No Makeup***
Exam #2	30% ***No Makeup***
Labs	20%
Project	15%
HW/Quiz	5%

"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."

I have read and acknowledge the policies and procedures described in this Syllabus

Name_____Date_____

Course Schedule: Lecture -Tuesday, Thursday – 11:00-12:15 Room 1110
Lab – Arranged one of 4 times on Tuesday/Thursday

Wk	Date	4202 Calendar Topic	Group 1,2,3	Group 4,5,6
1	08/26/13	Course Introduction / Basic Sensors		
2	09/02/13	(9/02 Mon - Labor Day)Basic Sensors / Op Amp Circuits	Lab Orientation	
3	09/09/13	Op Amp Circuits / Bio-Potentials	Lab 1	Lab 3
4	09/16/13	Bio-Potentials	Lab 2	Lab 4
5	09/23/13	Bio-Electrodes	Lab 3	Lab 1
6	09/30/13	Bio-Amplifiers	Lab 4	Lab 2
7	10/07/13	Review / Exam #1		
8	10/14/13	Project Instructions / Electrical Safety	Labs Available by appointment	
9	10/21/13	Blood Pressure /		
10	10/28/13	Blood Flow / **Exercise 1 Due Tuesday (10/29)**		
11	11/04/13	Respiratory / **Exercise 2 Due Tuesday (11/05)**		
12	11/11/13	Tue: Class Discussion – review Quiz4 Thur: **Final Project Reports Due (11/12)** 11/11 Monday – Veterans Day		
13	11/18/13	Tue: Group 1, 2, 3, 4 Presentation Thur: Group 5, 6, 7, 8 Presentation		
14	11/25/13	Tue: Class Discussion Thur: 11/28-29 Thanksgiving		
15	12/02/13	Tue: Group 9, 10, 11, 12 Presentation Thur: Review		
16	12/09/13	Final Exam		