BME4503/5500: Biomedical Instrumentation
Fall 2012 (Section 01AF/5674)

Catalog Description: This course will deal with the engineering and medical aspects of the measurement and processing of signals from living systems. Biomedical transducers for measurements of movement, biopotentials, pressure, flow, concentrations, and temperature are discussed, as well as treatment devices like ventilators and infusion pumps. Whenever possible devices actually used in clinical practice are used in class.

Credits: 03

Prerequisites:
BME4503: PHY 2049, MAC 2313, MAP 2302
BME 5500: Equivalent to above prerequisite.

Corequisites:
BME4503: BME4503L-Biomedical Instrumentation Laboratory

Instructor
Rosalind Sadleir, Ph.D. (sadleir@ufl.edu)
BMS Building J387 (352) 273-9326

Teaching Assistant
TBA

Office hours: by appointment (send email via Sakai)

Class Meetings: MWF 8th period (3:00 – 3:50 pm)
Locations:
MWF  NEB 101

Class Homepage: http://lss.at.ufl.edu (login to WebCT Vista)
The course schedule will be available on Sakai

Required textbook:
NB: Either the 3rd or 4th edition is acceptable.

Course Objectives:
• Students will learn sensor principles, rationales and designs.
• Students will understand design principles as they apply to measurements on the human body.
• Students will understand instrumentation regulation and safety considerations.

Major Topics:
• Basic concepts of medical instrumentation
• Basic sensors and principles
• The origin of biopotentials
• Biopotential electrodes
• Blood pressure and sound
• Measurements of flow and volume of blood
• Measurements of the respiratory system
• Chemical biosensors
• Clinical laboratory instrumentation
• Electrical safety

**Grade Determination:**
34% Homework
33% Midterm
33% Final

Final course grades will be curved.
No make-up exams will be granted, except for documented medical reasons

Grading Scale:

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<tr>
<th>Grade</th>
<th>92-100</th>
<th>87-91</th>
<th>83-86</th>
<th>80-82</th>
<th>77-79</th>
<th>73-76</th>
<th>70-72</th>
<th>67-69</th>
<th>63-62</th>
<th>60-61</th>
<th>&lt; 60</th>
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<tbody>
<tr>
<td>A</td>
<td>A-</td>
<td>B+</td>
<td>B</td>
<td>B-</td>
<td>C+</td>
<td>C</td>
<td>C-</td>
<td>D+</td>
<td>D</td>
<td>D-</td>
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A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: [http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html](http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html).

**Policies:**
Late policy for homework: 20% deducted per day, unless prior arrangements are made with the instructor. All work is individual; students are encouraged to work together on the homework, but *all work handed in must be individual work.*

**Academic Honesty:**
All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

**Students with Disabilities:**
Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

**UF counseling services:**
Resources are available on-campus for students having personal problems or lacking clear career
and academic goals. The resources include:

• University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
• SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
• Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
• Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

Software Use:
All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.