BME / ELEC 335 – Biosensors and Instrumentation

Term – Fall 2016 (201609)

CourseSpaces – http://coursespaces.uvic.ca/course/view.php?id=21738

Instructor
Dr. Poman So
Phone: 250-472-4224
E-mail: Poman.So@UVic.CA

Office Hours
Days: Tuesday and Wednesday
Time: 09:30 – 10:30
Location: EOW 417

Course Objectives
An introduction to and overview of the field of biomedical sensors and instrumentation.

Learning Outcomes
a) Describe various types of bio-signals and their physiological origins.
b) Explain the electronic circuits and devices used in biomedical equipment.
c) Explain, compare and evaluate sensors, transducers, and electrodes.
d) Explain depolarization and repolarization of the heart.
e) Interpret ECG signals and design ECG signal processing circuits.
f) Describe the evoked potentials in EEG and EMG.
g) Explain ultrasound propagation and compare various ultrasound imaging modes.
h) Describe modern physics and its applications in biomedical engineering.
i) Describe the physics of medical imaging.
j) Explain imagining technologies such as x-ray, CT, and MRI.

Syllabus
A study of the basic principles of biomedical electronics and measurement with emphasis on instruments and systems for biomedical data acquisition and processing. Topics will include electrocardiography (ECG), electroencephalography (EEG), medical ultrasound, magnetic resonance imaging (MRI), and x-ray computed tomography (CT).

A-Section: A01, CRN 10415 / 11231
Days: TWF
Time: 08:30 – 09:20
Location: CLE A205

B-Sections: B01 — B02
See the class schedule listing at the end of this course outline for details
Location: ELW A321

Required Text
Author: Webster
Publisher: Wiley
Year: 2009
Assessment:
Assignments: 10%  Due Dates: See CourseSpaces for details.
Labs 20%
Mid-term 10%  Date: Tuesday October 18, 2016.
Final Exam 60%

Note:
1. Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
2. Failure to pass the final exam will result in a failing grade for the course.
3. Plagiarism detection software may be used to aid the instructor and/or TAs in the review and grading of some or all of the work you submit (http://www.uvic.ca/library/research/citation/plagiarism/index.php).

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

There will be no supplemental examination for this course.

Note to Students:
Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

Accommodation of Religious Observance
http://web.uvic.ca/calendar2016-09/general/policies.html

Policy on Inclusivity and Diversity
http://web.uvic.ca/calendar2016-09/general/policies.html

Standards of Professional Behaviour
You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities. https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.

http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/academic-integrity.html

Course Lecture Notes
Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.
Biosensors and Instrumentation - 10415 - BME 335 - A01
Associated Term: First Term: Sep - Dec 2016
Registration Dates: Jun 13, 2016 to Sep 23, 2016
Levels: Graduate, Law, Undergraduate
Main Campus
Lecture Schedule Type
Face to Face Instructional Method
1.500 Credits
View Catalog Entry

Scheduled Meeting Times

<table>
<thead>
<tr>
<th>Type</th>
<th>Time</th>
<th>Days</th>
<th>Where</th>
<th>Date Range</th>
<th>Schedule Type</th>
<th>Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Week</td>
<td>8:30 am - 9:20 am</td>
<td>TWF</td>
<td>Clearihue Building A205</td>
<td>Sep 07, 2016 - Dec 02, 2016</td>
<td>Lecture</td>
<td>Poman Pok Man So (P)</td>
</tr>
</tbody>
</table>

Biosensors and Instrumentation - 10416 - BME 335 - B01
Labs meet on alternate weeks.
Associated Term: First Term: Sep - Dec 2016
Registration Dates: Jun 13, 2016 to Sep 23, 2016
Levels: Graduate, Law, Undergraduate
Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
View Catalog Entry

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</tr>
</thead>
<tbody>
<tr>
<td>Every Week</td>
<td>4:30 pm - 7:20 pm</td>
<td>T</td>
<td>Engineering Lab Wing A321</td>
<td>Sep 27, 2016 - Sep 27, 2016</td>
<td>Lab</td>
<td>TBA</td>
</tr>
<tr>
<td>Every Week</td>
<td>4:30 pm - 7:20 pm</td>
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<td>Engineering Lab Wing A321</td>
<td>Oct 18, 2016 - Oct 18, 2016</td>
<td>Lab</td>
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<td>Engineering Lab Wing A321</td>
<td>Nov 01, 2016 - Nov 01, 2016</td>
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<td>Nov 22, 2016 - Nov 22, 2016</td>
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Biosensors and Instrumentation - 10417 - BME 335 - B02
Labs meet on alternate weeks.
Associated Term: First Term: Sep - Dec 2016
Registration Dates: Jun 13, 2016 to Sep 23, 2016
Levels: Graduate, Law, Undergraduate
### Scheduled Meeting Times

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<tr>
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<td>12:30 pm - 3:20 pm</td>
<td>W</td>
<td>Engineering Lab Wing A321</td>
<td>Oct 05, 2016 - Oct 05, 2016</td>
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<tr>
<td>Every Week</td>
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<td>Oct 26, 2016 - Oct 26, 2016</td>
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<td>Nov 16, 2016 - Nov 16, 2016</td>
<td>Lab</td>
<td>TBA</td>
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<tr>
<td>Every Week</td>
<td>12:30 pm - 3:20 pm</td>
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<td>Nov 30, 2016 - Nov 30, 2016</td>
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</table>
Class Schedule Listing

First Term: Sep - Dec 2016
Aug 21, 2016

Sections Found

Biosensors and Instrumentation - 11231 - ELEC 335 - A01
Reserved for ECE students.
Associated Term: First Term: Sep - Dec 2016
Registration Dates: Jun 13, 2016 to Sep 23, 2016
Levels: Graduate, Undergraduate

Main Campus
Lecture Schedule Type
Face to Face Instructional Method
1.500 Credits
View Catalog Entry

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Biosensors and Instrumentation - 11232 - ELEC 335 - B01
Labs meet on alternate weeks.
Associated Term: First Term: Sep - Dec 2016
Registration Dates: Jun 13, 2016 to Sep 23, 2016
Levels: Graduate, Undergraduate

Main Campus
Lab Schedule Type
Face to Face Instructional Method
0.000 Credits
View Catalog Entry

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