



BME / ELEC 335 – Biosensors and Instrumentation

Term – Fall 2017 (201709)

CourseSpaces – <http://coursespaces.uvic.ca/course/view.php?id=34533>

Instructor

Dr. Poman So
Phone: 250-472-4224
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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

- Describe various types of bio-signals and their physiological origins.
- Explain the electronic circuits and devices used in biomedical equipment.
- Explain, compare and evaluate sensors, transducers, and electrodes.
- Explain depolarization and repolarization of the heart.
- Interpret ECG signals and design ECG signal processing circuits on PCB.
- Describe the evoked potentials in EEG and EMG.
- Explain ultrasound propagation and compare various ultrasound imaging modes.
- Describe modern physics and its applications in biomedical engineering.
- Describe the physics of medical imaging.
- Explain imaging 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).

Lectures

A-Section: A01, CRN 10438 / 11239
Days: TWF
Time: 08:30 – 09:20
Location: ELL 162

Labs

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

Required Text

Title: Medical Instrumentation Application and Design, 4ed, ISBN 978-0-471-67600-3
Author: Webster
Publisher: Wiley
Year: 2009

Assessment

Assignments:	10%	Due Dates:	See CourseSpaces for details.
Labs	20%		
Mid-term	10%	Date:	Tuesday October 17, 2017.
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/calendar2017-09/general/policies.html>

Policy on Inclusivity and Diversity: <http://web.uvic.ca/calendar2017-09/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/calendar2017-09/undergrad/info/regulations/academic-integrity.html>

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

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.

Class Schedule Listing

First Term: Sep - Dec 2017
 Aug 15, 2017

Sections Found

[Biosensors and Instrumentation - 10438 - BME 335 - A01](#)

Associated Term: First Term: Sep - Dec 2017
 Registration Dates: Jun 19, 2017 to Sep 22, 2017
 Levels: Graduate, Law, Undergraduate

Main Campus
 Lecture Schedule Type
 Face to Face Instructional Method
 1.500 Credits
[View Catalog Entry](#)

Scheduled Meeting Times

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Every Week	8:30 am - 9:20 am	TWF	Elliott Building 162	Sep 06, 2017 - Dec 01, 2017	Lecture	Poman Pok Man So (P)

[Biosensors and Instrumentation - 10439 - BME 335 - B01](#)

Labs meet on alternating weeks.
 Associated Term: First Term: Sep - Dec 2017
 Registration Dates: Jun 19, 2017 to Sep 22, 2017
 Levels: Graduate, Law, Undergraduate

Main Campus
 Lab Schedule Type
 Face to Face Instructional Method
 0.000 Credits
[View Catalog Entry](#)

Scheduled Meeting Times

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Every Week	4:30 pm - 7:20 pm	T	Engineering Lab Wing A321	Sep 26, 2017 - Sep 26, 2017	Lab	Poman Pok Man So (P)
Every Week	4:30 pm - 7:20 pm	T	Engineering Lab Wing A321	Oct 17, 2017 - Oct 17, 2017	Lab	TBA
Every Week	4:30 pm - 7:20 pm	T	Engineering Lab Wing A321	Oct 31, 2017 - Oct 31, 2017	Lab	TBA
Every Week	4:30 pm - 7:20 pm	T	Engineering Lab Wing A321	Nov 21, 2017 - Nov 21, 2017	Lab	TBA

[Biosensors and Instrumentation - 10440 - BME 335 - B02](#)

Labs meet on alternating weeks.
 Associated Term: First Term: Sep - Dec 2017

Registration Dates: Jun 19, 2017 to Sep 22, 2017

Levels: Graduate, Law, Undergraduate

Main Campus

Lab Schedule Type

Face to Face Instructional Method

0.000 Credits

[View Catalog Entry](#)**Scheduled Meeting Times**

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Oct 04, 2017 - Oct 04, 2017	Lab	Poman Pok Man So (P)
Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Oct 25, 2017 - Oct 25, 2017	Lab	TBA
Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Nov 08, 2017 - Nov 08, 2017	Lab	TBA
Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Nov 29, 2017 - Nov 29, 2017	Lab	TBA

Release: 8.7.2

Class Schedule Listing

First Term: Sep - Dec 2017
 Aug 15, 2017

Sections Found

[Biosensors and Instrumentation - 11239 - ELEC 335 - A01](#)

Reserved for ECE students.

Associated Term: First Term: Sep - Dec 2017

Registration Dates: Jun 19, 2017 to Sep 22, 2017

Levels: Graduate, Undergraduate

Main Campus

Lecture Schedule Type

Face to Face Instructional Method

1.500 Credits

[View Catalog Entry](#)

Scheduled Meeting Times

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Every Week	8:30 am - 9:20 am	TWF	Elliott Building 162	Sep 06, 2017 - Dec 01, 2017	Lecture	Poman Pok Man So (P)

[Biosensors and Instrumentation - 11241 - ELEC 335 - B02](#)

Labs meet on alternating weeks.

Associated Term: First Term: Sep - Dec 2017

Registration Dates: Jun 19, 2017 to Sep 22, 2017

Levels: Graduate, Undergraduate

Main Campus

Lab Schedule Type

Face to Face Instructional Method

0.000 Credits

[View Catalog Entry](#)

Scheduled Meeting Times

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Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Nov 08, 2017 - Nov 08, 2017	Lab	Poman Pok Man So (P)
Every Week	4:30 pm - 7:20 pm	W	Engineering Lab Wing A321	Nov 29, 2017 - Nov 29, 2017	Lab	Poman Pok Man So (P)