

# ECE4923 – Introduction to Biomedical Engineering

## COURSE OUTLINE Section FR01B – Winter 2015-16 [see D2L for Web Site](#)

Lecture Times: MW 11:30-12:20  
Lecture Room: H110  
Tutorials: F 11:30-12:20  
Labs: T 2:30 when scheduled

Instructor: D MacIsaac  
Office: ITD 418  
Office Hours: M 12:30-1:30; W 10:30-11:30  
Email: dmac@unb.ca subject tag: {ECE4923}

### **Course Description [prerequisite: ECE3111, ECE3511 is also useful ] [4ch]**

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This course is intended to introduce biomedical concepts in the context of electrical engineering. Topics covered will include basic anatomy and physiology, Biopotential origination and modeling, biosignal measurement, biosignal analysis and a survey of medical devices and health care technologies. Because the seminar and lab components of the course require extensive scheduling, students must enroll in this course within the first week of classes.

### **Reference Materials (optional)**

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RA Normann, **Principles of Bioinstrumentation**, John Wiley and Sons, New York, 1988.

LA Geddes, LE Baker, **Principles of Applied Biomedical Instrumentation**, John Wiley and Sons, New York, 1989.

AC Guyton, **Human Physiology and mechanisms of Disease**, WB Saunders Company, Philadelphia, 1992.

### **Attending Lectures, Labs and Tutorials**

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Students are responsible for all material presented and all announcements made in lectures. If you have to miss a lecture for any reason, it is your responsibility to obtain any information missed. Only students who attend lectures and/or labs/tutorials regularly will be allowed to seek additional assistance from instructors and teaching assistants during alternate hours.

## Marking Scheme

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- Student grades will be tallied according to:

Labs	15%	(3 worth 5% each)
Seminar & Report	30%	(20% seminar <sup>†</sup> + report, 5% Q&A, 5% Contributions )
Quizzes	20%	(about 5 – 1 quiz can be replaced by a short-report)
Final Examination:	35%	date TBA

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<sup>†</sup>Seminar make-up dates: Wednesday December 6<sup>th</sup>, Tuesday December 5<sup>th</sup> (to be used in that order)

- All students may complete 1 short report (instructions will be provided). The short report grade can be used to replace up to 1 quiz. Weighting of individual quizzes will be adjusted to accommodate other quizzes missed for legitimate reasons (illness, bereavement etc).
- Extensions for lab work will be granted only for legitimate reasons of extreme nature (*extended* illness or bereavement etc).
- Students who fail the final exam (<50%) may fail the course. If the final examination is deferred, it will be written on the 4<sup>th</sup> day of classes in the following term.
- **Attendance and participation milestones:** Students who have attended fewer than 10 classes by February 26<sup>th</sup> will fail the course unless they have scored a passing grade (50%) on all but one quiz administered by that date.
- **The last day to withdraw from courses without academic penalty is Friday February 26<sup>th</sup>.** Consider carefully your decision to remain in the course beyond this date. Appeals for late withdrawals will be challenged unless you can demonstrate conditions beyond your control which prevented you from choosing to withdraw by the deadline.
- Numerical Grade Conversion:

A+	90-100	B+	76-79	C+	65-69	D	50-59	F	<50
A	85-89	B	73-75	C	60-64				
A-	80-84	B-	70-72						

## Email Etiquette

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You are enrolled in a professional program, and must remember that all communications must be conducted in a professional manner. Always use your UNB email address when emailing an instructor. For this class, the subject must contain the tag {ECE4923}. Punctuation, spelling, and greetings must all be professional, and sign the email with your full name and student number. Unprofessional emails will not be acknowledged.

## Behavior

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Details regarding plagiarism can be found **in the Appendix** of this document. As you are a student in a senior level university course, it is your responsibility to ensure that you understand these details. If you do not, seek assistance from your instructor. Of special note in this class is that plagiarism includes “**knowingly representing as one’s own work any idea of another.**” Collaboration on report writing (including labs) is beneficial to a point that does not violate authorship of the work and cross over into plagiarism (‘copying’). Students ‘working in groups’ on labs should be careful that the reports they submit are indeed their own. Good advice: ‘Think together, write apart’.

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## COURSE OUTLINE (appendix) Section FR01B – Winter 2015-16

### Details Regarding General Student Non-academic Conduct

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As outlined in the UNB undergraduate calendar, the Board of Governors of the University has approved a set of general regulations which aim to foster a university environment which is:

*“...conducive to the development of the whole person, all members of the university community... have the right to work and/or study in an environment which affords them respect and dignity, and is free from danger, discrimination, harassment, intimidation, and behavior which is destructive, disruptive or unlawful”.*

The university has defined standards of student behavior and made provisions for student discipline when they engage in conduct that is inconsistent with the principles laid out in the General Regulations. These regulations delineate explicitly that students are expected to:

1. abide by university regulations;
2. respect the integrity of University programs and activities;
3. acknowledge the diversity of the University community and the freedom of all members to participate in University programs and activities;
4. promote the peaceful and safe enjoyment of University facilities by other members of the University and public;
5. conduct themselves at all times in a manner that will reflect credit on themselves and the University

It is the responsibility of each student to understand and abide by regulations regarding general conduct as outlined in the UNB undergraduate calendar (General Regulations on Student Non-academic Conduct A-G). Serious cases of general misconduct will be reported to the university.

## Details Regarding Plagiarism, Cheating and Academic Offences

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The University of New Brunswick places a high value on academic integrity and has a policy on plagiarism, cheating and other academic offences. Plagiarism includes:

1. quoting verbatim or almost verbatim from any source, including all electronic sources, without acknowledgement;
2. adopting someone else's line of thought, argument, arrangement, or supporting evidence without acknowledgement;
3. submitting someone else's work, in whatever form without acknowledgement;
4. knowingly representing as one's own work any idea of another.

Examples of other academic offences include: cheating on exams, tests, assignments or reports; impersonating somebody at a test or exam; obtaining an exam, test or other course materials through theft, collusion, purchase or other improper manner, submitting course work that is identical or substantially similar to work that has been submitted for another course; and more as set out in the academic regulations found in the Undergraduate Calendar.

Penalties for plagiarism and other academic offences range from a minimum of F (zero) in the assignment, exam or test to a maximum of suspension or expulsion from the University, plus a notation of the academic offence on the student's transcript.

For more information, please see the Undergraduate Calendar, Section B, Regulation VII.A, or visit <http://nocheating.unb.ca>. It is the student's responsibility to know the regulations.

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I, \_\_\_\_\_ as a student of ECE4923 in the Winter of \_\_\_\_\_  
have been made aware of the high value placed on academic integrity here at UNB and accept  
the terms of the policy on plagiarism as delineated above.

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(signature)

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(date)

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(signature)

(witness)

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(date)