Instructor

Instructor: Andrew Ibey

- Email: andrew.ibey@carleton.ca

Reminder for all emails to the Instructor and the TA:

- Should include 'SYSC 4203' in the subject of the email
- All email correspondence should be from your Carleton email account. Email from accounts other than your Carleton email account may not receive any response.
- For questions, it is a good idea to copy the TA
- Email responses from the instructor should not be expected immediately, or between the hours of 7:30am and 7:30pm

TAs

TA: TBD

TA Office Hours: TBD

Office Hours

- Office: N/A (not on campus)
- Office Hours: Default Virtual Office Hours are Thursday 8:30-9:30pm on BigBlueButton by demand. Email confirmation must be made at least 24 hours prior.
  - *** If there is a conflict with this time, please email me as alternate arrangements may be possible ***

Learning Outcomes

By the end of this course students will be able to:
• Visualize the anatomy and electrophysiology of humans and animals
• Describe the origin and characteristics of common biological signals
• Assess the performance of a biopotential acquisition system in terms of noise and interference
• Appraise biomedical measurement methods for blood pressure, flow, and oxygenation
• Choose appropriate signal conditioning and processing methods to analyze biomedical signals
• Build a biomedical system to measure and correlate common biological signals
• Describe high-level operation of medical imaging systems

Course Web Site
Accessed through https://carleton.ca/culearn

Textbook and References


Supplementary References:


Evaluation and Marking Scheme

To pass the course, a student must pass the final examination (D- or better). For these students, the marks will be calculated as follows:
<table>
<thead>
<tr>
<th>Item</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Laboratories</td>
<td>15</td>
</tr>
<tr>
<td>Project</td>
<td>10</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20</td>
</tr>
<tr>
<td>Final Exam</td>
<td>45</td>
</tr>
</tbody>
</table>

**Final Grades:**

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

**Labs**

Five mandatory labs, 3 hours each, held biweekly between the dates of Sep 10, 2018 to Dec 07, 2018. Students must sign up for one of the three lab sessions offered that does not conflict with their personal course schedule.

L1 - Days: Thursday, Time: 11:35-14:25  
L2 - Days: Tuesday, Time: 11:35-14:25  
L3 - Days: Monday, Time: 14:35-17:25

Prior to starting labwork, each student must read and sign the Carleton Laboratories Guidelines and Contract.

**Project**

This involves information-rich biomedical engineering research and design. Introduction, reinforcement, mastery and assessment of a) engineering skills including software, hardware and systems level design, and (b) communication skills practiced through documenting the design process and writing up a report. The department requires a deposit of $50 for each design project kit, which includes a breadboard, active and passive components. Return of all the borrowed items are necessary to refund the full deposit.

**Exams**

**Quizzes:** There will be 3 quizzes. Dates: **September 25, October 11 and November 20**

**Exams:** The will be one midterm exam during class time, and one final exam. All exams are closed book. Midterm Date: **October 30th**

Midterm exam papers will be returned to the students. Re-evaluations may be considered, only after 48 hours of receiving the exam and based on specific requests, and will be performed without the student’s presence. Students who are unable to write the exam because of illness or other circumstances beyond their control must provide evidence. In the case of illness, this requires a medical certificate dated no
later than one working day after the exam. The certificate must specify the date of the onset of the
illness, the (expected) date of recovery, and the extent to which the student was/is incapacitated during
the time of the examination. If this information is provided to the instructor no later than five working
days after the exam, the final exam mark will be used as the midterm exam mark; otherwise, the mark
for the missed exam will be 0.

The final examination is for evaluation purposes only and will not be returned to students. You will be
able to make arrangements with the instructor or with the department office to see your marked final
examination after the final grades have been made available. The final exam will be held during the
University's December examination period. Only students who have completed all the labs and design
project are eligible to write the final examination or, where circumstances warrant, apply to the
Registrar's Office for deferral of the final exam. Completed means any mark greater than 0 (note that in
case of confirmed cases of plagiarism, the usual penalty is to be awarded zero).

General Regulations

- **Copyright on Course Materials**: The materials created for this course (including course
  outline, slides, posted notes, labs, project, assignments, quizzes, exams and solutions) are
  intended for personal use and may not be reproduced or redistributed or posted on any web site
  without prior written permission from the author(s).

- **Attendance**: Students are expected to attend all lectures and lab periods. The University
  requires students to have a conflict-free timetable. For more information, see the current
  Undergraduate Calendar, Academic Regulations of the University, Section 1.2, Course Selection
  and Registration and Section 1.5, Deregistration. Requests to accommodate a missed midterm
  exam, lab periods, etc., because of conflicts with jobs or vacation plans will not be considered.

- **Health and Safety**: Every student should have a copy of our Health and Safety Manual. A PDF
  copy of this manual is available online: http://sce.carleton.ca/courses/health-and-safety.pdf.

- **Deferred Term Work**: Students who claim illness, injury or other extraordinary circumstances
  beyond their control as a reason for missed term work are held responsible for immediately
  informing the instructor concerned and for making alternate arrangements with the instructor
  and in all cases this must occur no later than three (3.0) working days after the term work was
due. The alternate arrangement must be made before the last day of classes in the term as
published in the academic schedule. For more information, see the Academic Regulations of the
University, Section 2.6, Deferred Term Work

- **Appeal of Grades**: The processes for dealing with questions or concerns regarding grades
  assigned during the term and final grades is described in the Academic Regulations of the
  University, Section 2.7, Informal Appeal of Grade and Section 2.8, Formal Appeal of Grade.

- **Academic Integrity**: Students should be aware of their obligations with regards to academic
  integrity. Please review the information about academic integrity at:
  https://carleton.ca/registrar/academic-integrity/ This site also contains a link to the complete
  Academic Integrity Policy that was approved by the University's Senate.

- **Academic Accommodations**: Requests for Academic Accommodation You may need special
  arrangements to meet your academic obligations during the term. For an accommodation
  request, the processes are as follows:
  - Pregnancy obligation
    Please contact your instructor with any requests for academic accommodation during the
    first two weeks of class, or as soon as possible after the need for accommodation is
    known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-
  - Religious obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

- **Academic Accommodations for Students with Disabilities**
  If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

- **Survivors of Sexual Violence**
  As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton’s Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

- **Accommodation for Student Activities**
  Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

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**Additional Information**

**Copyright:**

My lectures and course materials (including all PowerPoint presentations, handouts, and similar materials) are protected by copyright. I am the exclusive owner of copyright and intellectual property of all course materials. You may take notes and make copies of course materials for your own educational use. You may not allow others to reproduce or distribute lecture notes and course materials publicly for commercial purposes without my express written consent.

**Important Dates:**

https://carleton.ca/registrar/registration/dates-and-deadlines/

**September 18, 2018** - Last day of registration for fall term and fall/winter courses. Last day to change courses or sections (including auditing) for fall term and fall/winter courses. Graduate students who have not electronically submitted their final thesis copy to the Faculty of Graduate and Postdoctoral Affairs will not be eligible to graduate in fall 2018 and
must register for the fall 2018 term.

**September 30, 2018** - Last day to withdraw from fall term and fall/winter courses with a full fee adjustment (financial withdrawal). Withdrawals after this date will create no financial change to fall term fees and will result in a permanent notation of WDN appearing on your official transcript.

**October 8, 2018** - Statutory holiday. University closed.

**October 22-26, 2018** - Fall break. Classes are suspended.