BE491 Fall 2021 COURSE OVERVIEW

**Lecture:** Mondays at 10:10am – 11:00am, Pho206
**Lab:** BTEC (48 Cummington Mall, Room 201)

**Instructors:**
- **Michael Economo**
  24 Cummington Mall, Room 201
  Email: mne@bu.edu
  Office hours: Make appointments via email

- **Aleks Zosuls**
  44 Cummington Mall, Room 422
  Email: azosuls@bu.edu
  Office hours: Make appointments via email

**Graduate Teaching Fellows (GTFs):**
- **Ezira Wolle**
  Email: ezirayw@bu.edu
  Office hours: Tuesday 2:00-3:00
  Lab B3 - Monday

- **Brandon Williams**
  Email: bdwills@bu.edu
  Office hours: Friday 11:00-12:00
  Lab B2 - Tuesday

- **Roman Addokhi**
  Email: aaddokhi@bu.edu
  Office hours: Monday 9:00-10:00
  Lab B4 - Wednesday

- **Anna Novoseltseva**
  Email: annanov@bu.edu
  Office hours: Thursday 3:00-4:00
  Lab B1 - Thursday

- **Chenxin Sun**
  Email: scx@bu.edu
  Office hours: Wednesday 1:00-2:00

**Lab Sections:**
Note: There are a and b subsections for each of the sections listed below, please consult the BE491 schedule document for more details

- **B3:** Monday 2:30pm – 5:15pm
- **B4:** Wednesday 2:30pm - 5:15pm
- **B2:** Tuesday 8:00am - 10:45am
- **B1:** Thursday 8:00am - 10:45am
**COURSE OBJECTIVE**
BE491 is designed to accomplish four goals, shown below in the pyramid.

**BE491 Learning Objectives**

- Collect and analyze biomedical measurements
- Proper use of electronic equipment
- Communicate scientifically
- Reinforce BE 401 concepts

**GRADING**
Grades will be based on composite performance as follows (subject to change during the semester):
- Quizzes 10% (2 lowest grades will be dropped)
- Lab Worksheets (2) 30% (15% each)
- Lab Reports (3) 60% (20% each)
- Midterm Exam Pass/Fail (must pass to pass course)

**LAB ATTENDANCE**
All students must attend their assigned lab section. If students cannot attend their assigned lab section, they must notify their instructor/GTF in advance and make other arrangements to complete the lab exercises.

**Students must complete the LAB CHECKPOINTS** and show them to a GTF/instructor before the end of their scheduled lab section (more below).

**MAINTAINING A HEALTHY AND SAFE LAB ENVIRONMENT**
All students who attend the labs in-person:
1) Must wear a face mask at all times
2) Must show their green badge to a GTF upon arrival
3) Are responsible for disinfecting their workspace at the start and end of their lab section. Cleaning supplies will be supplied.

LAB CHECKPOINTS
Labs will require you to show results to your GTF before then end of your lab section. A portion of lab scores will be dependent upon demonstrating that you have reached these checkpoints during your scheduled lab section. This is to ensure that students have collected the data necessary for completing their worksheets/reports.

LAB WORKSHEETS
You will complete and turn in lab worksheets for Labs #1 and #2. Answer the questions in worksheet and include figures, as described. Lab worksheets will be due one week from the end of your scheduled lab section.

LAB REPORTS
Lab reports are required for labs #3-5. They are also due one week from the end of your scheduled lab section.

LATE WORK POLICY
For all lab worksheets and reports, scores will be reduced by 25% if turned in within one week of the scheduled due date. Scores will be reduced by 50% if turned in more than one week late. Quizzes cannot be completed late under any circumstances (2 lowest grades will be dropped).

ACADEMIC INTEGRITY
1) No raw data, processed data, figures, text, tables, or any other component of the lab may be shared between lab groups.
2) Data analysis and lab reports must be completed by students individually.

Plagiarism in any form will not be tolerated! Viewing another students written lab report/analysis code and/or providing your lab report/analysis code to other students are both violations of the plagiarism policy. Plagiarized assignments will be assigned a zero grade. Students found to have plagiarized assignments or provided their assignments to others may receive a failing grade in the course and/or a referral to the College of Engineering Academic Conduct Committee.

The University’s conduct code is here. all items apply to this course: http://www.bu.edu/academics/policies/academic-conduct-code/

MIDTERM
The Midterm Exam takes place during scheduled lab time and tests student mastery of skills, such as setting up equipment, taking measurements, and analyzing data. The midterm is pass/fail and students must pass the midterm in order to pass the course.
<table>
<thead>
<tr>
<th>Week of:</th>
<th>Lecture Topic</th>
<th>Lab</th>
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<tbody>
<tr>
<td>2021-08-30</td>
<td>Short week, No Class or Lab</td>
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<tr>
<td>2021-09-06</td>
<td>Labor day, No Class or Lab</td>
<td>Lab 0: Introduction to BE491</td>
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<tr>
<td>2021-09-13</td>
<td>Introduction to biomedical measurements</td>
<td>Lab 1a: Making measurements with the Arduino Nano</td>
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<tr>
<td>2021-09-20</td>
<td>Signal acquisition</td>
<td>Lab 1b: Making measurements with the Arduino Nano</td>
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<td>2021-09-27</td>
<td>Filtering</td>
<td>Lab 2a: Filtering in hardware and software</td>
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<tr>
<td>2021-10-04</td>
<td>The frequency domain</td>
<td>Lab 2b: Filtering in hardware and software</td>
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<tr>
<td>2021-10-11</td>
<td>Indigenous Peoples’, Writing lab reports</td>
<td>Lab 3a: Introduction to the frequency domain</td>
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<td>2021-10-18</td>
<td>Biopotentials</td>
<td>Lab 3b: Introduction to the frequency domain</td>
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<td>2021-10-25</td>
<td>Practical review</td>
<td>Practical</td>
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<td>2021-11-01</td>
<td>Light and life</td>
<td>Lab 4a: Imaging and image analysis I</td>
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<td>2021-11-08</td>
<td>Microscopy</td>
<td>Lab 4b: Imaging and image analysis I</td>
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<td>2021-11-15</td>
<td>Imaging biological processes</td>
<td>Lab 5a: Imaging and image analysis II</td>
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<td>2021-11-22</td>
<td>Thanksgiving, No class, no labs</td>
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<tr>
<td>2021-11-29</td>
<td>Bioethics</td>
<td>Lab 5b: Imaging and image analysis II</td>
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