

1. Course Information (20170623)

Medical Biophysics 3970Z:

General Biophysics Laboratory

Full-year half course 2017-2019 (51st anniversary of undergraduate Biophysics)

Intended primarily for students in Honors Specialization and Major modules in Medical Biophysics. Lectures will include introduction to scientific writing/reading, communication, and basic statistics. Laboratories include topics from biomechanics (mechanical properties of arteries), imaging (image processing/analysis), and biophysical analysis (washout models). Includes an individual 8-week project in a research laboratory.

Extra Information: 3 laboratory hours (3 laboratory hours every other week and up to 3 tutorial hours, at the instructor's discretion, in alternate weeks). 0.5 course spanning both the Fall and Winter terms.

Laboratory/Tutorial:

Tuesday/Wednesday 2:30-5:30 MSB-113

Although 3 hours are available for data collection and interaction with the instructors, it is expected that some labs and most tutorials and demonstrations will be completed in less time.

Antirequisite(s): The former Medical Biophysics 3302E.

Pre-or Corequisite(s): [Medical Biophysics 3330F/G](#); [Medical Biophysics 3501F](#); [Medical Biophysics 3505F](#).

Senate regulation regarding the student's responsibility regarding requisites:

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
John Ronald (JR) (Course Coordinator)	(via OWL)/ jronald@robarts.ca	Robarts 2241A	24391	TBA
Amy Schranz (AS)	aschranz@uwo.ca	TBA	TBA	TBA
Katie Parkins (KP)	kparkin8@uwo.ca	TBA	TBA	TBA

OWL: Students with OWL issues should see: <https://owl.uwo.ca/portal/site/owldocs>

3. Course Syllabus

This course replaces the laboratory component of the former Medical Biophysics 3302E

COURSE OBJECTIVES

- (i) To complement the lecture material presented in MBP 3501F (Transport Systems), MBP 3505F (Mathematical Transforms) and MBP3330F (Biomechanics)
- (ii) To provide hands on experience using a biophysics approach to research.
- (iii) To prepare students for the Medical Biophysics 4th year research projects (MBP 4970E, 4971E)

APPROACH

Set laboratory exercises: Approximately 3 set exercises will be performed by small groups of students where raw data is collected for further analysis. Some labs will require the full 3 hours while others may be completed in less time. Some labs use a low-tech approach to understanding universal concepts rather than high-tech equipment which may not be useful in a few years. Preliminary analysis will be discussed in a group session a week or two following the lab and reports (common data, individual analysis and discussion) are submitted the following week.

Research Lab Tours: Students are given the opportunity to visit research labs in small groups. This provides an opportunity for students to obtain an overview of research in the department, make contacts and plan for their eight-week project.

Eight-Week Projects: During the latter part of the year, students work in biophysics research labs on individual projects for eight weeks. This provides them with an opportunity to experience the research environment, contribute to ongoing projects, give scientific presentations/reports, and plan for their 4th year project. (Examples of [previous projects](#) are available in the undergraduate section of the department website)

Expected Learning Outcomes - Upon completion of the course, students should be able to:

1. Develop hypotheses and design experiments to test hypotheses, develop problem-solving skills, and learn to effectively communicate results for a variety of medical biophysics research topics such as Microcirculation & Cellular Biophysics (Lab 1), Biomechanics (Lab 2), and Medical Imaging (Lab 3) (Critical Inquiry and Creative Thinking, Communication, Knowledge).
2. Use mathematical and physical models to analyse data (Knowledge).
3. Use basic statistical analysis to test for significance in differences found in lab results (Knowledge).
4. Work in a research environment by interacting with research colleagues and providing individual input to the overall project (Professionalism and Ethical Conduct; Literacies and Interdisciplinarity)
5. Report the results of scientific studies using a variety of modern written and oral presentation styles (Communication)

Medical Biophysics 3970Z LABORATORY

DATE 2016	Instructor	Fall Term - MSB113, Tues-Wed 2:30 - 5:30 pm
Sep 12 13	JR/AS/KP	Lab Introduction.
19 20	JR/AS/KP	Lab 1
26 27	JR/AS/KP	Lecture: Oral Presentations & Statistics Intro Review lab 1 and Develop a PowerPoint (PPT) presentation
Oct 3 4	JR/AS/KP	Research lab tours
10 11	TBD/JR/AS/ KP	PPT Presentation for Lab 1 (10%)
17 18	JR/AS/KP	Research lab tours Hand-In Corrected PPT Slides (5%)
24 25	JR/AS/KP	Journal Club (Participation mark – 5%)
Oct 31 Nov 1	TBD/JR/AS/ KP	Lab 2. Conference Abstract Overview
7 8	JR/AS/KP	Lecture: Scientific Writing (Full Report/Abstract/Poster) Consultation about Lab 2 Abstract
14 15	JR/AS/KP	Students choice of research project supervisor due Lab 2 Abstract Due (15%)
21 22	TBD/JR/AS/ KP	Lab 3. Template of ePoster
28 29	JR/AS/KP	Consultation about Lab 3 ePoster One-on-one meetings to discuss research project
Dec 5 6	JR/AS/KP	Lab 3 ePoster Due (15%)
Research lab tours are a good opportunity to develop ideas for 8-week projects		

Medical Biophysics 3970Z LABORATORY

DATE 2017	Instructor	Winter Term MSB113, Tues or Wed 2:30 - 5:30 pm
Jan 9 10	Supervisors	Projects - Week 1
16 17	Supervisors	Projects - Week 2
23 24	Supervisors	Projects - Week 3 Drop-IN about project pitch
30 31	Supervisors AS/JR/KP	Projects - Week 4 3-minute project pitch (5%)
Feb 6 7	Supervisors	Projects - Week 5
13 14	Supervisors	Projects - Week 6
Feb 19 - 23 Reading Week		
Feb 27 28	Supervisors	Projects - Week 7
Mar 6 7	AS/KP	Projects - Week 8 Consulting (Expectations for Presentations) Supervisor Evaluation Due (10%)
13 14	JR/AS/KP Supervisors	Eight Week Project Presentations (15%)
20 21	AS/KP	Consulting (Expectations for Write-up)
27 28	JR/AS/KP Supervisors	Eight Week Project Write-up (20%) Due 2 weeks after presentation
April 3 4		No lab
**Supervisors for eight-week projects should be finalized by the end of the fall term. In many cases, graduate students are the direct supervisors.		

4. Course Materials:

There is no formal text for the course. Instructional material will be provided electronically (primarily via OWL) and students may be directed to on-line references.

Textbook:	None required
Supplemental Information:	Provided via OWL
Laboratory Manual:	Provided via OWL
Laboratory Materials:	Provided
Safety Materials:	As required for specific labs
Electronic Devices:	Laptops or equivalent are useful for calculations and records

5. Evaluation:

Component	Approximate % of Final Mark
Set Labs (3)	45
Journal Club Participation	5
3-Minute Project Pitch	5
Project Presentation	15
Project Report	20
Project Supervisor Evaluation	10

There are no exams for the course

6. Additional Information/Statements

Statement on Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf .

Offenses include

Plagiarism, which may be defined as “The act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.” Excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed., p. 1170. This concept applies with equal force to all assignments, including laboratory reports, diagrams, and computer projects. Students wishing more detailed information should consult their instructor, Department Chair, or Dean’s Office. In addition, they may seek guidance from a variety of current style manuals available in the University’s libraries. Information about these resources can be found at www.lib.uwo.ca/services/styleguides.html .

In this course, there are a number of written reports required for evaluation. We feel strongly that students should work together, sharing raw data and ideas. Reports submitted for marking, however, must be written independently. After working together, take the data, go away, do the analysis and write it up without looking at anyone else’s work. In a course as small as this, it’s easy for us to spot material with a common source.

Absence from course commitments

A. Absence for medical illness:

Students must familiarize themselves with the Policy on Accommodation for Medical Illness for Undergraduate Students, located at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf
The policy is also accessible from the Medical Accommodation

B. Absence for non-medical reasons:

Material submitted for evaluation (assignments, lab reports) after the due date will be subjected to a late penalty of 10%/day but will not be accepted after marked material has been returned to the class. Missed material will be given 0% unless accommodation is made through the Office of the Dean of Science.

C. Special Examinations

There is no final exam for this course, but students are expected to present their projects as a PowerPoint presentation at a scheduled time. Under exceptional circumstances, students may seek permission to make alternate arrangements.

Support Services:

Registrarial Services: <http://www.registrar.uwo.ca>

Academic Counselling (Science and Basic Medical Sciences):
http://www.uwo.ca/sci/undergrad/academic_counselling/index.html

USC Student Support Services: <http://westernusc.ca/services/>

Student Development Centre: <http://www.sdc.uwo.ca>

Student Health Services: <http://www.shs.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western
<http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.