


Medical Biophysics
MEDBIO 4970E/4971E – Research Project in Biophysics

Course Syllabus for Fall 2024/Winter 2025



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

1. Technical Requirements:



Stable internet connection



Laptop or computer

2. Important Dates:



| Classes Begin | Reading Week | Classes End | Study Days | Exam Period |
|---------------|---------------|-------------|--------------|---------------|
| September 5 | October 12–20 | December 6 | December 7–8 | December 9–22 |

September 30, 2024, is National Day for Truth and Reconciliation and is a non-instructional day
December 2, 2024: Last day to withdraw from a full course without academic penalty

| Classes Resume | Reading Week | Classes End | Study Days | Exam Period |
|----------------|----------------|-------------|------------|-------------|
| January 6 | February 15–23 | April 4 | April 5–6 | April 7–30 |

3. Contact Information

| Course Coordinator | Contact Information |
|--------------------|---------------------|
| | |

| Teaching Assistants | Contact Information |
|---------------------|---------------------|
| Fall Term | |
| | |
| Winter Term | |
| | |

4. Course Description and Design

Delivery Mode: In-person

Major laboratory course in experimental biophysics for Honours Specialization modules offered by the Department of Medical Biophysics. Three components are: a major experimental project (topic and advisor chosen in consultation with the student), scientific communication (student presentation and reports), and electronic information processing (data capture, computer analysis of biophysical signals).

Antirequisite: Medical Biophysics 4971E.

Prerequisites: Medical Biophysics 3980E or the former Medical Biophysics 3970Z and registration in Year 4 of one of the following Honours Specialization modules: Medical Biophysics (Medical Science Concentration), Medical Biophysics (Physical Science Concentration), or Medical Biophysics (Biological Science Concentration); or registration in Year 4 of an Honours Specialization in Medical Biophysics and Biochemistry plus either Medical Biophysics 3980E or the former Medical Biophysics 3970Z or Biochemistry 3380G.

Extra Information:

Students are expected to spend a minimum of 15 hours per week working on their research project.

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.

Timetabled Sessions

| Component | Date | Time | Location |
|------------------------|------|------|----------|
| Lecture | | | |
| Lab (Winter Term Only) | | | |

- Asynchronous pre-work must be completed prior to lecture sessions
- Attendance at sessions is required
- Missed work should be completed within 24 hours

All course material will be posted to OWL: <https://westernu.brightspace.com/d2l/login>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Brightspace Help](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

Current versions of all popular browsers (e.g., Safari, Chrome, Edge, Firefox) are supported with OWL Brightspace; what is most important is that you update your browser frequently to ensure it is current. All JavaScript and cookies should be enabled.

5. Learning Outcomes

Upon successful completion of this course, students will be able to:

- Compile a literature review based on primary literature and develop a rationale and motivation for a research project.
- Work independently and/or collaboratively on a research project, explain the methods, results, and discuss the meaning of the research findings in relation to existing peer-reviewed literature through the writing of a scientific report in journal manuscript format (“the thesis”).
- Demonstrate independent technical expertise for lab procedures (general or field-specific) and record study/experimental details in a clear, rigorous, and repeatable manner.
- Present research work clearly and accessibly to a variety of audiences, through short pitches, seminar-length oral presentations, and as a scientific poster.

6. Course Content and Schedule

Required Activities:

There are four main components to this course:

1. An individual research project in the laboratory of a faculty member.
2. Regularly scheduled in-class lectures/workshops.
3. Attendance at departmental seminars on Mondays at 9:30 am (optional, but highly encouraged).
4. Completion of additional assignments.

Research Project:

Students are responsible for finding a research project and supervisor. Supervisors must have a faculty appointment in the Department of Medical Biophysics or another Western University department. Preference should be given to professors who have submitted projects that appear on the resources/projects page.

If a student has arranged to work with a specific supervisor who has not submitted a project description, then the student and supervisor must provide a project description for approval within 2 weeks of the first class. Please send the project description to the course instructor by email.

As part of their research project, each student is required to complete assignments and presentations related to their research.

Classes:

This portion of the course will emphasize critical analysis and communication in science. Students will meet throughout the year at assigned times for instruction and practice in these aspects of scientific research.

The schedule for both the fall and winter terms can be found below. Please note that this is a draft schedule and may be subject to changes. Any modifications will be communicated via the course OWL Brightspace page and during class.

Fall Schedule

| Week | Date | Topic | Instructor |
|------|------|--|------------|
| 1 | | No Class (Labour Day) | |
| 2 | | Course Introduction | |
| 3 | | Laboratory Notebooks | |
| 4 | | Library Resources (Online Module) | |
| 5 | | No Class (National Day for Truth and Reconciliation) | |
| 6 | | Research Proposals | |
| 7 | | No Class (Reading Week) | |
| 8 | | Presenting Short Talks | |
| 9 | | Graduate Studies | |
| 10 | | Quick Pitch – 3MT Presentations | |
| 11 | | Writing your Resume/CV | |
| 12 | | Scientific Writing | |
| 13 | | No Class | |
| 14 | | Open Office Hours | |

Winter Schedule

| Week | Date | Topic | Instructor |
|------|------|----------------------------|------------|
| 1 | | No Class | |
| 2 | | EDI-D in Research | |
| 3 | | Presenting Seminars | |
| 4 | | Principles of Statistics | |
| 5 | | Scientific Posters | |
| 6 | | Mini Seminar Presentations | |
| 7 | | No Class (Reading Week) | |
| 8 | | No Class | |
| 9 | | Poster Presentations | |
| 10 | | Peer Thesis Review | |
| 11 | | No Class | |
| 12 | | Thesis Presentations | |
| 13 | | Thesis Defenses | |

- **Note:** Medical Biophysics Undergraduate Research Day Presentation – Date in March TBD

7. Participation and Engagement

- Students are expected to participate and engage with content as much as possible
- Students can participate during lectures, seminars, and class discussions
- Students can also participate by interacting in the forums with their peers and instructors

8. Assessment and Evaluation

A summary of each evaluation is detailed below. The department and course coordinator reserve the right to make adjustment to the grading scheme and deadlines if deemed necessary. Any deviations will be communicated. In brief, students will be evaluated by their supervisor on their performance in the laboratory. This will include not only technical skills, but also their familiarity with the scientific literature and their contribution to the experimental design, analysis, and interpretation of the data. This evaluation will be done at two times during the academic year. The first will be done at the end of the first term and is designed to inform the student on their progress to date. The second evaluation will be done at the end of the second term. We will provide you with the marking sheet so that you can see the evaluation criteria.

For written work, all assignments will be evaluated by the course teaching assistant(s). The scientific paper (“thesis”) will be evaluated by teaching assistant(s) and the course coordinator. Peer evaluation will be utilized for earlier draft versions of the paper, to help you improve your writing. Please note that the supervisors will not assist you in writing your thesis. Students will be evaluated on their written assignments and oral presentations throughout the year by the course coordinator, teaching assistant(s), and potentially other faculty involved. Feedback will be given to students as soon as possible after presentations. All written work, including the final scientific paper (thesis), must be submitted electronically through OWL Brightspace. Hard copies of the paper will not be accepted.

Student participation in the oral presentation sessions is expected. Attendance at all activities, including lecture and workshops, is mandatory, and there are no exceptions to this rule. If you are unable to attend a session, the usual University requirements for absence apply (see Section 14) and you should inform both the course TA(s) and instructor as soon as possible. Failure to attend classes and workshops will result in a reduction in the participation and attendance mark.

| Assessment | Format | Weighting | Due Date | Flexibility |
|---------------------------------|---------------|-----------|----------|-------------------------|
| Library Resources Assignment | Written | 5% | | 48-hour no late penalty |
| Annotated Bibliography | Written | 1% | | 48-hour no late penalty |
| Research Proposal/Project Plan | Written | 4% | | 48-hour no late penalty |
| Quick Pitch – 3MT | Oral | 5% | | Not applicable |
| Thesis Draft 1 | Written | 2% | | 48-hour no late penalty |
| Mini Seminar | Oral | 5% | | Not applicable |
| Abstract | Written | 4% | | 48-hour no late penalty |
| Scientific Poster + 1 min Pitch | Poster & Oral | 5% | | Not applicable |
| Thesis Draft 2 | Written | 2% | | Not applicable |
| Thesis Draft 2 Peer Review | Written | 2% | | 48-hour no late penalty |
| Final Seminar | Oral | 10% | | Not applicable |
| Oral Thesis Defense | Oral | 10% | | Not applicable |
| Research Paper (Final Thesis) | Written | 20% | | 48-hour no late penalty |
| Lab Performance (Term 1) | - | 10% | | Not applicable |
| Lab Performance (Term 2) | - | 10% | | Not applicable |
| Attendance & Participation | - | 5% | | Not applicable |
| Data Submission to Supervisor | - | - | | Not applicable |

Designated Assessment: Instructors are permitted to designate one assessment per course per term as requiring supporting documentation to receive academic consideration. See below for information on academic consideration policy and missed course work. For this course no assessment has been designated as requiring supporting documentation.

Information about flexibility in assessment

- Flexibility in assessment has been applied to this course; therefore, academic consideration requests may be denied on the assessments where flexibility is included.
- This course employs flexible deadlines for assignments. The assignment deadlines can be found above in the course outline. For each assignment, students are expected to submit the assignment by the deadline listed. Should illness or extenuating circumstances arise, students are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. Should students submit their assessment beyond 48 hours past the deadline, a late penalty of 20% per day will be subtracted from the assessed grade. Requests for academic consideration supported by documentation must be submitted within 48 hours of the original deadline. The instructor reserves the right to deny such academic considerations, given the deadline flexibility provided. If you have a long- term academic consideration or an accommodation for disability that allows greater flexibility than provided here, please reach out to the course coordinator at least one week prior to the posted deadline.

General information about assessments

- All assignments are due at 11:59 pm EST unless otherwise specified
- Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0
- Written assignments may be submitted to Turnitin (statement in policies below)
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- Properly following instructions on each assignment submission is very important. This includes submitting assignments in the correct location, formatting the assignment correctly, as well as other details which will be clearly outlined in the rubric. A deduction of 10% from the assignment will be applied for not adhering to instructions.
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days
- Any grade appeals on assignments must be received within 3 weeks of the grade being posted.
- In the event a student has been involved in academic misconduct (e.g., plagiarism) with respect to a thesis, presentation or assignment, the student will receive a grade of zero and be subject to UWO penalties for academic misconduct (see below).

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

| | | |
|----|----------|---|
| A+ | 90-100 | One could scarcely expect better from a student at this level |
| A | 80-89 | Superior work which is clearly above average |
| B | 70-79 | Good work, meeting all requirements, and eminently satisfactory |
| C | 60-69 | Competent work, meeting requirements |
| D | 50-59 | Fair work, minimally acceptable |
| F | below 50 | Fail |

Information about late or missed assessments:

- Late assessments without academic consideration will be subject to a late penalty of 20% for each 24h period or fraction thereof after the due date (e.g., assessments submitted a few minutes after the deadline will be penalized 20%).
- All oral presentations, the poster presentation, the final written thesis, and the oral defense must be completed to pass the course.

INC (Incomplete Standing): If a student has been approved by the Academic Advising Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Advising to carry a full course load for the term the incomplete course work is scheduled.

9. Communication

- Students should check the OWL Brightspace site every 24–48 hours
- Students should email their instructor and teaching assistants using email
- Emails will be monitored daily; students will receive a response in 24–48 hours
- This course will use discussions on Brightspace
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

10. Office Hours

- Office hours can be held in-person or remotely using Zoom
- Office hours can be booked via email
- Office hours can be individual or group

11. Resources

- All resources will be posted in OWL Brightspace
- There is no required textbook

12. Professionalism & Privacy

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments

Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [Non-Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35). Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia,

xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

13. How to Be Successful in this Class

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your progress. Populate all your deadlines at the start of the term and schedule your time throughout the course.
2. Make it a daily habit to log onto OWL Brightspace to ensure you have seen everything posted to help you succeed in this class.
3. Follow checklists created on OWL Brightspace or create your own to help you stay on track.
4. Start your research project as soon as possible and work regularly on it throughout the year.
5. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
6. Connect with others. Try forming a study group and meet regularly for peer support and feedback.
7. Do not be afraid to ask questions. If you are struggling with your research project or are facing any challenges, please contact the instructor and or teaching assistant(s).
8. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

14. Western Academic Policies and Statements

A. Absence from Course Commitments

Students must familiarize themselves with the Policy on [Academic Consideration – Undergraduate Students in First Entry Programs](#)

Students missing course work for medical, compassionate, or extenuating circumstances can request academic consideration by completing a request at the central academic consideration portal. Students are permitted one academic consideration request per course per term **without** supporting documentation. Note that supporting documentation is **always** required for academic consideration requests for examinations scheduled by the office of the registrar (e.g., December and April exams) and for practical laboratory and performance tests (typically scheduled during the last week of the term).

Students should also note that the instructor may **designate** one assessment per course per term that requires supporting documentation. This designated assessment is described elsewhere in this document. Academic consideration requests may be denied when flexibility in assessment has already been included. Examples of flexibility in assessment include when there are assessments not required for calculation of the final grade (e.g. 8 out of 10 quizzes) or there is flexibility in the submission timeframe (e.g. 72 hour no late penalty period).

Please note that any academic considerations granted in this course will be determined by the instructor of this course, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course syllabus. Supporting documentation for academic considerations for absences due to illness should use the [Student Medical Certificate](#) or, where that is not possible, equivalent documentation by a health care practitioner.

Accommodation for Religious Holidays

Students should review the policy for [Accommodation for Religious Holidays](#). Where a student will be unable to write examinations and term tests due to a conflicting religious holiday, they should inform their instructors as soon as possible but not later than two weeks prior to writing the examination/term test. In the case of conflict with a midterm test, students should inform their instructor as soon as possible but not later than one week prior to the midterm.

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

B. Academic Offenses

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

C. 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 Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

D. Correspondence Statement

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

E. Discovery Credit Statement

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

F. Essay Course Guidelines

The guidelines for the minimum written assignments refer to the cumulative amount of written work in a course but excludes written work in examinations. You can read about essay course guidelines [here](#).

An essay course must normally involve total written assignments (essays or other appropriate prose composition, excluding examinations) as follows:

- Full course (1000 to 1999): at least 3000 words
- Half course (1000 to 1999): at least 1500 words
- Full course (2000 and above): at least 5000 words
- Half course (2000 and above): at least 2500 words

The structure of the essay course must be such that in order to pass the course, the student must exhibit some minimal level of competence in essay writing and the appropriate level of knowledge of the content of the course.

G. Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and [Turnitin.com](https://www.turnitin.com).

15. BMSUE Academic Policies and Statements

Cell Phone and Electronic Device Policy (for in-person tests and exams)

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, e.g., cell phones, tablets, cameras, smart glasses, smart watch or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.45 becomes 74, and 74.50 becomes 75. Marks **WILL NOT** be bumped to the next grade or GPA, e.g., a 79 will **NOT** be bumped up to an 80, an 84 **WILL NOT** be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark "bumping" will be denied.

Statement on the use of Generative Artificial Intelligence (AI) Platforms

Within this course, students are permitted to use AI tools exclusively for information gathering and preliminary research purposes. These tools are intended to enhance the learning experience by providing

access to diverse information sources. However, it is essential that students critically evaluate the obtained information, exercise independent thinking, and engage in original research to synthesize and develop their own ideas, arguments, and perspectives. The use of AI tools can serve as a starting point for exploration, with students expected to uphold academic integrity by appropriately attributing all sources and avoiding plagiarism. Assignments and the final thesis should reflect the students' own thoughts and independent written work. By adhering to these guidelines, students contribute to a responsible and ethical learning environment that promotes critical thinking, independent inquiry and allows them to produce original written contributions.

16. Support Services

- Students who are in emotional/mental distress should refer to Mental Health @Western Health <https://www.uwo.ca/health/> for a complete list of options about how to obtain help.
- To connect with a case manager or set up an appointment, please contact support@uwo.ca.
- Other important links:
 - [Academic Advising \(Science and Basic Medical Sciences\)](#)
 - [Appeal Procedures](#)
 - [Registrarial Services](#)
 - [Student Development Services](#)
 - [Student Health Services](#)

Statement on Gender-Based and Sexual Violence

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.