



Physics & Astronomy

Physics 4999E: Honours Research

Course Outline 2023-24

Land Acknowledgement: Western University is located on the traditional territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous Peoples (First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

1. Course Information

Course: Physics 4999E, Honours Research, 2023-2024

Prerequisite(s): Registration in the fourth year of an honors Physics, Astrophysics, or Medical Physics program. 1.0 Course.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) 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.

2. Instructor Information

Course Coordinator	Email	Office	Phone	Student office hours
Prof Pauline Barmby (she/her)	pbarmby@uwo.ca	PAB 204	519-661-2111 ext. 81557	Friday 1230-1330 or by appointment: book a Zoom meeting at https://calendly.com/pbarmby

Students must use their Western (@uwo.ca) email addresses when contacting their instructors, as messages from other providers may be treated as spam.

3. Course Syllabus, Schedule, Delivery Mode

In this course, the student will work on a research project, either experimental or theoretical, under faculty supervision, and present the results in a written report and in a seminar.

Learning outcomes:

After successfully completing this course, students will be able to:

- Describe best practices and approaches in scientific research
- Search and understand the scientific literature
- Describe and execute the fundamentals of scientific writing
- Write a scientific report
- Construct a science poster
- Present research in an oral presentation

A detailed list of learning outcomes is provided on the course OWL site under Resources.

Class meeting times:

Not all weeks will have a class meeting. Changes to the schedule below will be announced on OWL.

Date	Topic	Relevant due dates
[*]	Welcome & introduction	
[*]	Science report structure: abstract	
[*]	Individual meetings to discuss projects	
[*]	Sections: Introductions & literature reviews	Project abstract due*
[*]	Finding, reading & citing scientific literature	
[*]	Science writing	Annotated bibliography due*
[*]	Sections: Materials & methods	
[*]	Sections: Results & discussion	Introduction & lit. review due*
[*]	Sections: Conclusions	
[*]	Science talks – oral presentations	
[*]	Midterm presentations – location TBA	
[*]	Creating scientific posters	
[*]	(no class)	Thesis due*
Mid-April	Final presentations – location TBA	
[*]		Revised thesis due, if applicable*

* Deadlines for submitting documents to the OWL site will be at 11.59AM

Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for course material, news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

The overall course grade will be calculated as listed below. This course has no exams.

Course component	Weight	Evaluated by
Best 4 marks on 6 following components:		
Project abstract	5%	Coordinator
Annotated bibliography	5%	Coordinator
Introduction & literature review	5%	Coordinator
Monthly log-book uploads to OWL (5)	5%	Coordinator
Peer feedback on project abstract OR literature review	5%	Coordinator
Midterm presentation OR PhUNC poster presentation	5%	Coordinator
Final Presentation	10%	All attending faculty
Written report (Thesis) Evaluation	40%	Two readers
Mid-year performance Evaluation	5%	Supervisor
Final performance Evaluation	25%	Supervisor

As this is a designated essay course, a grade of 50% or higher on the written report is required in order to pass the course. The Department of Physics and Astronomy may, in rare cases, adjust the final course marks in order to conform to Department policy.

Deadline/due date policy

Deadlines exist to help you manage your workload. All deadlines except for presentations have a 48-hour grace period with no mark deduction. No extensions beyond 48 hours are possible except with academic accommodation as noted below.

Other course policies

Use of Generative AI: The learning outcomes of this course include reading scientific literature, understanding and summarizing it, and generating your own contributions to the literature as you document your research. Writing about science develops your thinking in a way that reading alone does not, so it is very important for you to write your documents yourself. The use of generative AI tools (ChatGPT, etc) to summarize text does not develop your own understanding and may produce written material that looks authoritative but is factually incorrect or biased. Like other writing tools (e.g. Grammarly), generative AI tools may be useful for revising text that you have written.

The assignments that you submit for this course should not include text that was generated from scratch from an AI tool prompt. You may (but are not required to) use AI tools to revise text that you originally wrote, in which case you must declare that use in the same way that you would declare your use of any other software written by someone else. You are ultimately responsible for any inaccuracies in your written work, whether introduced by AI tools or by yourself. Please be aware that confidential data, e.g. non-public research data, should not be entered into generative AI tools.

Integrity in science involves claiming credit only for work that you performed; the use of AI tools without

acknowledgment violates this integrity. If you are found to have used AI tools inappropriately, this will be considered a violation of Western's academic integrity and scholastic offense policies. Please ask if you have questions about this topic or this policy.

Project changes: major changes in the project title, scope, research direction and supervisor (including the addition or removal of any collaborators) will require **scheduling a meeting** with the course coordinator to obtain approval. Work on any projects not approved by the course coordinator does not qualify for Physics 4999 and will not be considered for evaluation.

When to contact the course coordinator: You should contact the course coordinator for any issue regarding the course that is not about the specifics of your research project. This includes logistical issues and possible ambiguities in guidelines or instructions, but might also involve problems with the project, collaborators or supervisor. If you have concerns about your progress, you should first of all express these concerns to your supervisor. If that does not resolve the problem, you should see the course coordinator as soon as possible. It might still be possible to redefine your project in November, but not in January. Ultimately, you are responsible for your progress; managing your own time and progress is an important scientific research skill that you will practice in this course.

6. Student Absences

Academic Consideration for Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade:

There are 6 course components each worth 5% of the course grade; only the best 4 of these will be considered. Accordingly, no extensions or make-ups will be given for these components.

Assessments worth 10% or more of the overall course grade:

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For further information, please consult the University's medical illness policy at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

The Student Medical Certificate is available at https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Accommodation for a missed final presentation will be a rescheduled presentation or, if rescheduling is not possible, reweighting. Accommodation for delays in completing the written report will be an extension to the deadline. Extension beyond the end of the term requires permission from Academic Counselling for a grade of INC and may not be possible depending on supervision availability. Such an extension could potentially delay graduation.

7. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) providing recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf,

8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy available at

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

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.

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 Web site:

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

All required papers may 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 The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

9. Support Services

Counseling — Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>

Learning Skills — Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management,

multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

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

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.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Accessibility — Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Thriving — Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: www.uwo.ca/se/digital/

Student Council services — Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>

Complaints and Suggestions: If you have a concern about something, please let us know. We rely on your feedback. Please contact initially the person most directly concerned – this will usually be your instructor. If that is not satisfactory, or if there is something more general bothering you, talk it over with the Physics & Astronomy Department Associate Chair of Undergraduate Affairs (for contact information see <http://www.physics.uwo.ca>).