

Physics & Astronomy

Physics 4999E: Honours Research

Course Outline 2026-27

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, 2026-2027

Timetable: Thursday 12:30 - 1:30 PM in PAB- 117, unless otherwise specified.

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

Unless students have either the prerequisites for this course or written special permission from their Dean's Designate to enroll in it, they may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on their academic record. This decision may not be appealed.

2. Instructor Information

Course Coordinators	Email	Office	Phone	Student office hours
Prof Mahi R. Singh (Fall term)	msingh@uwo.ca	PAB 116	ext. 86427	No office hour
Prof Yu Shi (Winter term)	yshi673@uwo.ca	PAB 210	ext. 84392	Thur 1:30-2:30pm In person

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 scientific literature
- Describe and execute the fundamentals of scientific writing
- Write a scientific report and 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 every week will have a class meeting. Changes to the schedule below will be announced in the class or by email.

Date	Topic	Relevant due dates
Thu Sept 10	Welcome and introduction	
Thu Sept 17	Project structure	
Thu Sep 24		Project title and supervisor name due
Thu Oct 1	Sections: Introductions & literature reviews Sections: Materials and methods	
Thu Oct 10-18	Fall Reading week	Fall Reading week
Thu Oct 22	Sections: Results & discussion Sections: Conclusions	
Thu Oct 29	TBA	
Thu Nov 12		Abstract, Introduction & References
Thu Dec 3	No class	
Thu Jan 7	AI in research	
Thu Jan 14	Science talks – oral presentations	
Thu Jan 21, Jan 28	Midterm presentations	
Thu Feb 4	Creating scientific posters	
Mid-March	Physics Undergraduate Conference (PhUnC)	
March 25	Q & A for thesis	
April 1	(no class)	Thesis due
Mid-April	Final presentations – location TBA	
Thu Apr 26		Revised thesis due, if applicable

- All deadlines except for presentations and written thesis have a 48-hour grace period with no mark deduction.
- No extensions beyond 48 hours are possible except with academic accommodation. Late penalties of 10%/day will be applied.

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 be adapted accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

4. Course Materials

Class materials will be distributed in the class.

5. Methods of Evaluation

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

Course component	Weight	Evaluated by
Abstract, Introduction & References	20%	Coordinator
Monthly log-book	5%	Coordinator
Mid-term performance Evaluation	10%	Coordinator
Midterm presentation OR PhUNC poster	5%	Coordinator
Final Presentation	10%	All attending faculty
Written report (Thesis) Evaluation	40%	Two readers
Mid-year performance Evaluation	5%	Supervisor
Final performance Evaluation	5%	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.

General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All assignments in the course except for the midterm presentation, final presentation, and written thesis follow the Faculty of Science's Flexible Completion Policy. This means that missing **one** component of the assignment will have the weight of the missed components redistributed to the remaining components in the same category. When a student miss more than one component, then the weight of the missed component will be shifted to the weight of the written thesis.

However, the following assessments are excluded from this:

- Midterm Presentation: If a student missed the Midterm Presentation, they will be required to present at the locally organized physics undergraduate conference PhUnC. If a student missed both with documented academic accommodations, the grade will be shifted to the Final Presentation.
- Final Presentation: If a student missed the Final Presentation with documented academic accommodations, the presentation grade will be shifted to the thesis evaluation by two readers.

Evaluation Scheme for Missed Assessments

Make-up and late policies specific to this course are as follows:

- All deadlines except for presentations and written thesis have a 48-hour grace period with no mark deduction.
- No extensions beyond 48 hours are possible except with academic accommodation. Late penalties of 10%/day will be applied.
- *Presentations*: see above Midterm and Final Presentation evaluation schemes for missed assessments.
- *Written thesis*: Students are encouraged to finish and submit their written thesis in advance of the due date. There is a 24-hour grace period until the end of term. 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 and readers' availability. Such an extension could potentially delay graduation.

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

By policy, academic considerations for work totaling 10% or more of the final course grade can be granted only by the student's Faculty of Registration (typically by their academic counsellors). In such cases, students should be directed as follows.

For work totaling 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/academic_consideration.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 reweighted to the written thesis evaluation by two readers.

For the written thesis, as mentioned above, there is a 24-hour grace period extension to the end of term, April 1, 2027. 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 and readers' 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 an 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 visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides 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 <https://www.registrar.uwo.ca/>.

In accordance with policy,

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 their 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:

https://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>).

Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, hidden cameras and wireless earbuds.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at a student's desk, on their person, or within reach during an assessment will be treated as a scholastic offence, even if the device is not in use.

Effective September 2026, the typical penalty for this offence is a failing grade in the course AND a 12-month prohibition on retaking the course.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is their responsibility to review and comply with these expectations.

9. Support Services

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

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

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.

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.

Learning-skills counsellors at Learning Development and Success (<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.

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: <https://www.uwo.ca/se/digital/>.

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>).