

## Physics 2101 Course Outline

### 1. Course Information

#### Course Information

Physics 2101A: Intermediate Physics

Fall 2024

#### List of Prerequisites

Physics 1201A/B or Physics 1401A/B or Physics 1501A/B or the former Physics 1301A/B, each with a minimum mark of 60%, or the former Physics 1028A/B with a minimum mark of 80%; Physics 1202A/B or Physics 1402A/B or Physics 1502A/B or the former Physics 1302A/B, each with a minimum mark of 60%, or the former Physics 1029A/B with a minimum mark of 80%; a minimum mark of 60% in each of (Calculus 1000A/B or Calculus 1500A/B or Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B) and (Calculus 1301A/B or Calculus 1501A/B or Numerical and Mathematical Methods 1414A/B or the former Applied Mathematics 1414A/B), or in the former Applied Mathematics 1413. Integrated Science 1001X with a minimum mark of 60% can be used in place of Physics 1202A/B and Calculus 1301A/B.

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

Instructors	Email	Office	Phone	Office Hours
Dr. Margaret Campbell-Brown	Margaret.campbell@uwo.ca		519-661-2111 x86712	
TA:				

### 3. Course Syllabus, Schedule, Delivery Mode

### Course Description:

Geometric optics, propagation of light, thermal properties of matter, laws of thermodynamics, electromagnetic induction, Maxwell's equations, electromagnetic waves.

### Learning Outcomes:

By the end of the course, students should be able to:

- Explain how the microscopic properties of matter explain macroscopic properties like heat capacity, phase changes, and the effects of work and heat transfer.
- Use the first and second laws of thermodynamics to analyse idealized heat engines and refrigerators
- Solve electromagnetic induction problems, including alternating current circuits, using Maxwell's equations
- Explain how the properties of electromagnetic waves arise from Maxwell's equations
- Explain the basic properties of reflection and refraction with Huygen's and Fermat's principles
- Solve basic geometric optics problems for mirrors and refracting surfaces

### Important dates:

6 Sept: First class (no tutorial)

13 Sept: Quiz 1

16 Sept: Assignment 1 due

20 Sept: Quiz 2

27 Sept: Quiz 3

30 Sept: Assignment 2 due (non-instructional day)

4 Oct: Quiz 4

11 Oct: Midterm 1 (in class)

12-20 Oct: Reading Week

21 Oct: Assignment 3 due

25 Oct: Quiz 5; Makeup for Midterm 1

1 Nov: Quiz 6

4 Nov: Assignment 4 due

8 Nov: Quiz 7

15 Nov: Midterm 2 (in class)

18 Nov: Assignment 5 due

22 Nov: Quiz 8; Makeup for Midterm 2

29 Nov: Quiz 9

2 Dec: Assignment 6 due

6 Dec: Last class

Final exam date TBA

Makeup for final exam TBA (early January)

## 4. Course Materials

**Text:** University Physics with Modern Physics, Young & Freedman, Pearson, 15<sup>th</sup> ed, **or a similar first-year textbook:** contact me if you have questions about your text.

Students will also need a non-graphing, non-wifi calculator for some exams.

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for 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 Brightspace 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

### Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

- Assignments: 20%
- Quizzes: 10%
- Midterm Tests 35%
- Final Exam: 35%

**Assignments:** approximately 1 assignment every 2 weeks (6 assignments total)

Each assignment will consist of three to six problems, plus four to eight short answer questions. The problems will be long answer, with most marks awarded for the method of problem solving. **Assignments are due by 4 pm on their due date.**

The due date will be given when the problems are assigned. Late assignments will be penalized 10% per day for up to four days: assignments will **not** be accepted more than **four days** past the due date. **Submitting an assignment at 4:05 pm on the due date counts as one day late.**

For each assignment, each student has 2 “late days” which they may use without notifying the professor, and without securing accommodation; no penalty will be applied to assignment grades for these days. Note that the assignment due date is not changed by this accommodation, which is intended to replace formal accommodation for illness. Each student has an additional two “late days” which they may use at any time through the term, either both for a single assignment or one each for two assignments. Again, there is no need to notify the professor. These days will be automatically tallied as they are used. Once all late days have been used, the 10% per day penalty will be applied to any further late days.

Students may consult with one another when completing assignments, but every student must submit his or her own work. No peer consultation will be permitted on the exams.

All assignments are to be submitted electronically on or before the due date. Assignments will be uploaded as a single pdf to Gradescope (linked on the OWL site), and feedback will be viewable there after the grades are uploaded to the gradebook. Assignments may be typed or written by hand and scanned. If using a phone camera, please pay attention to shadows and focus, and check that the pdf you upload has all your pages in order, and that each page is legible. Clearly identify each problem and question.

**Tutorial Quizzes:**

There will be nine tutorial quizzes, which will consist of short answer questions and short problems; the best seven will be used in the final grade calculation. These quizzes will last the full tutorial time, but are open book and open notes. Students may ask questions of the TA in charge of the tutorial, and use any online resources. Quizzes are given only in the tutorial: students missing a tutorial must use that as one of their two dropped grades.

### Midterm tests:

There will be **two midterms**. A formula sheet will be provided, and will be available before the test for studying. A non-graphing, non-wi-fi enabled calculator is permitted. No other aids are permitted, including extra sheets, computers, cell phones, smart watches, PDAs, advanced calculators or other electronic devices. Midterm 1 will cover material from Assignments 1 and 2 (typically Chapters 17-19). Midterm 2 will cover material from Assignments 3 and 4 (typically Chapters 20, 22, 28, 29).

If a student misses the makeup exam, with accommodation, they will have their grade reweighted with the midterm grade going to the final exam. Alternatively, a student may choose to write the midterm during the next offering of the course, in 2025.

### Final Exam:

The final exam is cumulative, and will consist of approximately 5 problems plus 10 short answer questions. A formula sheet will be provided. A non-graphing, non-wi-fi enabled calculator is permitted. No other aids. A single makeup date will be offered in January; a student missing the makeup with accommodation must write the final exam during the next offering of the course, in 2025.

The Department of Physics and Astronomy may, in rare cases, adjust the final course marks in order to conform to Departmental 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](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/](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 Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this

course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- [Examinations scheduled during official examination periods](#) (Defined by policy)

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

## Evaluation Scheme for Missed Assessments

### Assignments:

For minor illnesses, students may use their two free late days (48 hours) for more time on assignments, plus two flexible late days which can be used as some point in the term. Any additional late days will be penalized at 10% per day. Under no circumstances will assignments be accepted after four days, when the solutions will be posted. **Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (48 hours).**

### Quizzes:

Two quizzes may be missed without academic penalty. If all nine quizzes are written, the lowest two grades will be dropped. Any missed quizzes are automatically included in the two dropped grades. There are no makeup quizzes.

### Midterms:

A makeup exam will be provided for each of the midterms. If the makeup is missed, Academic Consideration must be sought, and the weight of the midterm will be transferred to the Final Exam. Alternatively, the student may choose to write the midterm at the next seating of the course, in 2025.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period. A student missing the makeup exam with Academic Consideration will be permitted to write the exam with the next seating of the course, in 2025.

## 6. Additional Statements

### Religious Accommodation

When 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 to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## **Academic Policies**

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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.

Non-graphing, non-wifi calculators will be permitted during exams. No other electronic devices are permitted.

**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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

## **Support Services**

Please visit the Science & Basic Medical Sciences Academic Advising 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](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](mailto: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

[https://academicsupport.uwo.ca/accessible\\_education/index.html](https://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/>.