Western Science

Department of Physics & Astronomy

# Physics 1201A Course Outline

## 1. Course Information

**Course Information**
Physics 1201A (0.5 course), Physics for the Sciences I, Fall 2025.

Physics 1201 – Physics for the Sciences I (3 lecture hours, 3 laboratory hours): An introductory laboratory-based course in physics covering the foundational principles of kinematics, force and motion, energy, linear momentum, rotational motion, torque, equilibrium, angular momentum, geometric optics and optical instruments. Fundamental physics concepts are introduced with examples in physical, biological, and medical processes to develop students' problem-solving skills.

Note: This course, together with Physics 1202A/B, is a suitable prerequisite for modules having an introductory physics requirement (including modules in the Faculty of Science, modules offered by the basic Medical Science departments, and professional schools requiring a calculus-based laboratory course in physics).

| | **1201A Section 001** | **1201A Section 002** |
|---|---|---|
| Lectures | | |

**List of Prerequisites**
12U Calculus and Vectors (MCV4U) or Mathematics 0110A/B.

Unless you have either the prerequisites 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.

**Anti-requisites:** Physics 1101A/B, Physics 1401A/B, Physics 1501A/B, the former Physics 1028A/B, or the former Physics 1301A/B.

**Lectures:** 3 in person lecture hours per week. **Note:** You must attend the section you are registered in because Section 001 is full, the classroom cannot hold more students.

**Tutorials:** 2 in person hours every two weeks (in your lab timeslot, see tutorial schedule for more details).

**Labs:** 3 in person hours every two weeks.

# 2. Course Contact Information

Please contact the appropriate individual for your given question type to ensure the fastest, most accurate replies to your inquiries.

General Course Questions (Non-Content Related)

Any general course questions (non physics specific course content related) should be directed to the following JIRA link: https://help.sci.uwo.ca/servicedesk/customer/portal/8

Due to the large number of students in the course, we use the JIRA ticket system to make sure questions are responded to in a timely manner. General questions sent to the JIRA link will be answered and/or filtered to the appropriate individual by the following course assistants:

Dr. Isabelle Cyr (Program Assistant)
Jennifer Tilston (Undergraduate Affairs Assistant)

All Lab Related Inquiries

All lab related inquiries should also be sent to the course JIRA link:
https://help.sci.uwo.ca/servicedesk/customer/portal/8

These inquiries will be answered by the first year lab supervisor, Dr. Shailesh Nene, or someone else from the first year lab team. This team is responsible for all lab related inquiries, including grades and late submissions.

Specific Physics Content Questions

If you have specific course content questions (e.g. help with how to solve a certain physics problem), the first point of contact will be your tutorial TA. Please see the lab/ tutorial schedule to determine your exact tutorial section and TA. The course TA team this Fall is:

Debayan Das – ddas25@uwo.ca
Nicolas Frisella – nfrisell@uwo.ca
Garrett Kirk – gkirk6@uwo.ca
Rina Rast – krast@uwo.ca
James Smith james.smith@uwo.ca
Xingtong Jiang – xjian65@uwo.ca
Alyson Loney – aloney3@uwo.ca
Erica Roscoe – eroscoe@uwo.ca
Liam Wilson – lwils66@uwo.ca

These TAs will not only be running your tutorial sessions, and will be available each week in a weekly office hour; they are happy to help answer your physics specific questions, so be sure to stop by these hours if you are struggling with the course content. Please see the TA Office Hour schedule on OWL for more information.

Instructor Specific Questions

The course instructor (Baker) will be available to answer questions after each class, please come up to the front of the class after lecture if you have content or instructor specific questions. If you need to personally contact Baker, please email introphysics-baker@uwo.ca using your @uwo email.

# 3. Course Syllabus, Key Dates

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

**Key Dates:**

**Classes begin:** Sept 4, 2025
**Reading Week:** November 3 – 9, 2025
**Classes end:** December 9, 2025
**Exam period:** December 11 – 22, 2025

**Course Schedule (See Course Schedule, Deadlines and Requirements document on OWL for more details, below is a brief summary):**

The course is divided into three parts. Each part is followed by a midterm, or final exam. Lectures 1-12 (before Midterm 1) focus on the topic of Equations of Motion; Midterm 1 will be based on these first 12 lectures. Lectures 11-22 (before Midterm 2) focus on the topic of Conservation Laws; Midterm 2 will be based on content from Lectures 11-22. Lectures 23-34 (after Midterm 2) focus on the topics of Rotation and Gravitation; the Final Exam will be cumulative (entire course) with a heavier weight on content from Lectures 23-34. More details regarding exam format, style, etc. will be given in class and uploaded to the Course Information folder on OWL before the first midterm.

**Course-level learning outcomes:**
The aim of this course is not only to gain a thorough understanding of the physics topics covered in class, but also to learn how to *think like a physicist* when describing phenomena or solving problems. Thus, by the end of this course, students should be able to:

- use a step-by-step problem-solving strategy underpinned with conceptual understanding to logically work through complex problems.
- reason through conceptual physics problems using clear, concise writing and diagrams.
- use knowledge and/or intuition to evaluate whether the answer to a problem makes sense.
- develop physics thinking skills and problem-solving approaches that are useful in a wide variety of different fields
- extend and apply Newton's Laws of Motion and conservation laws.
- perform appropriate experimental set-up, data collection and analysis to investigate a physical relationship.
- apply research skills such as measurement taking, uncertainty propagation, graphical analysis, and written discussion of results in the lab.
- engage in critical analysis of a problem individually and through team effort, effectively communicating your approach to others, through laboratory projects or other activities
- acquire an intuitive understanding of fundamental physics concepts
- learn calculus-based techniques in some approaches.
- develop physics thinking skills and problem-solving approaches that are useful in other fields and in everyday situations.

# 4. Course Materials

**Course Content:** The course content will be delivered in the form of freely available Open Educational Resources (OER) on OWL. This includes the lecture, assignment and tutorial content for the course. The typed .pdf lecture content for each lecture will be made available for free on OWL, typically before the lecture date. These notes are comprehensive and are the primary material to study from in the course. Additional problems and solutions will be made available, such as through the course assignments.

**Lab Manual:** Physics Laboratory Manual 2025 for Physics 1201A. This Lab Manual will be available for purchase on *Perusall*, or from the Western Bookstore. You are required to purchase the first-semester lab manual for the course. Please contact the course JIRA https://help.sci.uwo.ca/servicedesk/customer/portal/8 if you have any difficulties obtaining this lab manual.

**OWL:** The course OWL will contain all lecture content and important course material: http://owl.uwo.ca. This will also contain a link to *Perusall* for the laboratory manual. Students are responsible for checking the course OWL site on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

# 5. Methods of Evaluation

Student performance will be evaluated regularly throughout the term with the following:

## Assignments

- **Six Assignments:** A maximum of six assignments will be posted to OWL, featuring questions which must be answered by writing on paper (or writing tablet). These answers must then be scanned and submitted to OWL in a single .pdf file before or during the 48 hour no-late-penalty window. Assignments submitted after this window will be given a grade of 0%, because full solutions are posted at the end of the assignment submission window. Assignments grades are given on a pass/fail basis, 1% of your overall grade per assignment.
- **Assignment Resubmissions:** After each written assignment, written resubmissions must also be submitted to OWL, by Monday at 11:59pm following the assignment deadline. Full solutions to each problem will be posted to help with your resubmission. In the resubmission, you are required to resubmit only any problems you answered incorrectly on the initial submission. If you answered all correctly in the first submission, you must upload a .pdf that states: No Corrections, somewhere on the page. Resubmission deadlines also have a 48 hour no late penalty window. There will be a place to upload late submissions for consideration on Gradescope. Like the assignments, each resubmission is worth 0.5% of your overall grade.

Note: For the total maximum 8% given on assignments + resubmissions, your lowest 1% will be dropped, counting only the best 8/9 for your final grade. Therefore if you miss one assignment, or two resubmissions, you can still receive 100% for the assignment grade (if all others are passed). **See Course Schedule, Deadlines and Requirements document on OWL for more details.**

## Exams

- **Two Midterms** and a **Final Exam**. Two 22% Midterm Exams will occur on Oct 4 and Oct 31; see Course Schedule above for more details. A 33% Final Exam will be scheduled later in the course.
- **Makeup Exams** There will be no makeup Midterm Exams in this course. If you receive permission from academic counselling to miss a midterm, this 22% will be split evenly over the other midterm and Final Exam. If you receive permission from academic counselling to miss both midterms, then the entire 44% midterm grade will be added to the Final Exam. The Final Exam must be taken: there will be one makeup Final Exam. See section 6. Student Absences for more details.

## Labs

- **Four labs.** See the lab information sheet on OWL for all lab related info. There are four labs this semester. The lab component of the course is under the responsibility of Dr. Shailesh Nene. Any questions about the labs should be addressed to him via a JIRA ticket (https://help.sci.uwo.ca/servicedesk/customer/portal/8).

## Tutorials

- **Six tutorials.** Tutorials are required in this course, which will occur on weeks when you do not have lab, in the same timeslot. Each tutorial is worth 1% of your grade. Grades are pass/fail, based on an escape room style tutorial where you must complete weekly task(s) before leaving and being granted the 1% for that week. The best 5 of 6 tutorials will be counted for the course, so you have miss one and still receive a 100% tutorial grade. In tutorials: a) using any source other than the course lecture notes and text, is not allowed, b) using notes from someone who already completed the tutorial, is not allowed. If you use a) or b), you will receive a maximum grade of 0.5% for that weeks tutorial. **See Course Schedule, Deadlines and Requirements document on OWL for more details.**

  The overall course grade will be calculated as listed below:

| | |
|---|---|
| Assignments + Resubmissions (Best 8/9 total % grades) | 8% |
| Tutorials (Best 5 of 6) | 5% |
| Labs | 10% |
| Midterm Exams, 22% each | 44% |
| Final Exam (scheduled by Registrar's Office) | 33% |

The Department of Physics & Astronomy may, in exceptional cases, adjust the final course marks to conform to Departmental policy.

# 6. 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:**

- **Assignments*:*** no accommodations or make-up, the best 8 out of a total possible 9 percentage points will count towards the course grade

- **Tutorials:** if you cannot make a tutorial, you must contact your tutorial TA directly. They will have other sections they are teaching where you can make the tutorial up. Alternatively, they will give you options for other TA's sections. Every 2 weeks the tutorials change topic, so you have 2 week windows to complete each tutorial. The best 5 of 6 tutorials count towards your grade.
- **Absence from a Lab:** a missed lab will be assigned a mark of zero unless you have been granted academic consideration through an academic counsellor at the Dean's office of your home faculty. Students with approved academic consideration should contact the lab team via JIRA (https://help.sci.uwo.ca/servicedesk/customer/portal/8) with the subject line "Missed lab <lab name> - requesting accommodation" to arrange the make up for a missed lab, which may be online.

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

For assessments 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.

**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 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 labs, midterms and the final exam are excluded from this, and therefore always require formal supporting documentation.

**Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you can do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examination).

**Note:** missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

# 7. Accommodation and Accessibility

**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.

**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,

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.

**Technology** Only calculators are allowed on exams: basic calculators only (non-programmable).

**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.

# 8. Academic Policies

The website for Registrarial Services is http://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.

There are no restrictions on calculators. However, any "smart" devices with ethernet connectivity are not allowed.

**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.

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

Remote Proctoring Software may be used in this course, including in the event of health lock-down. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at:
https://remoteproctoring.uwo.ca.

# 9. Support Services

Please visit the Western Engineering Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.eng.uwo.ca/undergraduate/academic-support-and-accommodations/academic-counselling.html
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/.

This course is supported by the Science Student Donation Fund. If you are a student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Advising site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at ssc@uwo.ca.