

# Physics 1101A – Introduction to Physics I

## Fall 2023, Course Syllabus

Department of Physics and Astronomy, Western University, London, Canada

### Instructor

Professor Shantanu Basu, Department of Physics and Astronomy

### Teaching Assistant

Max Vovk, Department of Physics and Astronomy

### Lab Instructor

Dr. Shailesh Nene, Department of Physics and Astronomy

### Course Administrator

Dr. Isabelle Cyr, Department of Physics and Astronomy

### Required Text and Resources

- **Sears and Zemansky's College Physics**, 11<sup>th</sup> edition, H. D. Young. P. W. Adams (Pearson). Available in e-text bundled with access to the Mastering Physics online platform. (A print copy is an optional purchase and can be ordered from the publisher.) The assignments will be hosted on Mastering Physics from Pearson.
- **Lab Manual for Physics 1101A.**

The above resources in bold can be purchased online through the Western Bookstore, <https://bookstore.uwo.ca>. You can also access your personal textbook list for all your courses by logging into your Student Services account.

**Antirequisite(s): Physics 1201A/B, Physics 1401A/B, Physics 1501A/B, the former Physics 1028A/B, the former Physics 1301A/B.**

**Pre or Corequisite(s): Grade 12U Advanced Functions (MHF4U) or Mathematics 0110A/B.**

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 meet the necessary requisites.

## Course Description

An introductory algebra-based course in physics covering the foundation principles of kinematics, forces, conservation of energy and momentum, torque, equilibrium, geometric optics and optical instruments. Fundamental physics concepts are introduced with examples from biological applications.

This is a 0.5 course with 3 lecture hours per week plus laboratory.

Lectures are three times a week and labs are held approximately once every two weeks.

## Course Objectives

- Develop physics thinking skills and problem-solving approaches that are useful in other fields and in everyday situations
- Acquire an intuitive understanding of fundamental physics concepts
- Engage in critical analysis of a problem individually and through team effort, effectively communicating your approach to others, through laboratory projects and other activities

## Contact Info

1. Post **technical, administrative, or physics** questions on the relevant forums on the course OWL site.
2. For confidential issues that can't be posted to the OWL forums, use a JIRA ticket: <https://help.sci.uwo.ca/servicedesk/customer/portal/8>.
3. Nearly all issues can be handled in the above two methods. For the rare exceptional cases you can email me at [basu@uwo.ca](mailto:basu@uwo.ca). Note that I will not respond to emails that fall under the above two categories, or to emails from addresses other than your UWO account.

**Lab Contact:** Dr. Shailesh Nene, MSA-2203, can be contacted through the JIRA ticket: <https://help.sci.uwo.ca/servicedesk/customer/portal/8>.

**Teaching Assistants:** Office hours will be available to assist during the homework assignment periods and to prepare for exams. Details will be announced on the course OWL site.

## Evaluation

Your final course grade will be calculated as follows:

<b>Midterm Exam</b>	<b>30%</b>
<b>Final Exam</b>	<b>40%</b>
<b>Homework Assignments</b>	<b>20%</b>
<b>Laboratory Assignments</b>	<b>10%</b>

### Midterm Examination

The Midterm Exam will take place on [\*], location TBA.

### Final Examination

The Final Exam will be cumulative. The date and time of the exam will be announced by the Registrar's Office.

### Homework Assignments

The Homework Assignments will be administered through Mastering Physics. The assignments including due dates will be coming through the course OWL page. Your top 5 out of 6 assignment marks will be counted at equal-weight toward the overall mark.

### Laboratory Assignments

The Laboratory Assignments will take place during the scheduled lab hours. Details will be posted on OWL.

## **Schedule**

Approximate lecture schedule:

Sep 11-15	Chapter 1/2	Kinematics
Sep 18-22	Chapter 2/3	Kinematics
Sep 25-29*	Chapter 4	Newton's Laws
Oct 2-6	Chapter 5	Applications of Newton's Laws
Oct 9*-13	Chapter 6	Circular Motion and Gravitation
Oct 16-20	Chapter 6 and midterm review	
Oct 23-27	Chapter 7	Work and Energy
Oct 30-Nov3	Reading week	
Nov 6-10	Chapter 8	Momentum
Nov 13-17	Chapter 9	Rotational Motion

Nov 20-24	Chapter 10	Dynamics of Rotational Motion
Nov 22-Dec 1	Chapter 23(part)/24	Geometric Optics
Dec 4-8	Chapter 25 and review	Optical Instruments

\*There is no class on the dates marked by an asterisk.

The detailed lab schedule will be posted on OWL.

### Student Absences

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

Mastering Physics Assignments: I will count only the best 5 assignment grades out of 6. Therefore, there is no penalty if you miss one assignment. You will receive part marks for partially completed assignments. Please start the assignments well ahead of deadlines. The deadlines will not be extended. If you missed an entire assignment by the due date, I encourage you to still complete the assignment without receiving grades because it will affect your preparation for the midterm and final exams.

Labs: One lab can be missed without failing the entire course. If you miss one lab without accommodation, you can get up to 7.5% marks out of the 10%. If a second lab is missed, you need an approved accommodation from the academic counseling, and then you should contact Dr. Shailesh Nene via JIRA ticket who will guide you further. See the document Labs-Info for more details.

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

With the above academic counselling approval, you may take the makeup midterm on [\*] if you missed the midterm on [\*]. If you miss both the midterm and the makeup and with academic counselling approval, then your midterm grade weight will be shifted to the final exam.

## **Department Policy**

Course marks may, in some cases, be adjusted to conform to the meaning of course marks described in the Western Academic Calendar, and to conform to Department policy. Final grades will be rounded to the nearest integer, and you cannot expect that grades ending in 9 (e.g., 69) will be automatically increased by 1 mark.

## **Equity, Diversity, and Inclusion**

The principles of EDI are very meaningful to me, and I will try to foster an atmosphere of respect and inclusion, where all voices can be heard. All class members should treat others with professional respect and equal consideration in both written and spoken communication. We should work to provide an environment that encourages the free expression and exchange of ideas.

Western has historically had EDI challenges and it requires ongoing efforts by all for improvement. I encourage you to read the recent report of the President's Anti-racism Working Group, available at <https://president.uwo.ca/pdf/arwg-final-report-to-president-shepard-fnl.pdf>, and seek out resources available at <https://www.edi.uwo.ca/resources/>.

The Canadian Association of Physicists (CAP) has published a special magazine issue on inclusion available at <https://pic-pac.cap.ca/> and the Canadian Astronomical Society (CASCA) has compiled a list of EDI resources at [https://casca.ca/?page\\_id=17441](https://casca.ca/?page_id=17441).

## **Decolonization Statement**

Western sits on the traditional territories of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnocton Peoples. The legacy of colonization and colonialism is felt globally and is imprinted in our educational system. Western is taking some initial steps toward recognizing it. Textbooks can be biased toward a particular cultural narrative. Physics textbooks are no exception. I will strive to include unique content as much as I can, and I seek your feedback. I encourage you to read the following articles and share your ideas on this topic with me and with your colleagues.

<https://news.westernu.ca/2021/06/moving-toward-decolonizing-the-curriculum/>

<https://indigenous.uwo.ca/initiatives/learning/12-ways.html>

## **OWL Site**

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.

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.

## **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 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 Registrarial Services is <http://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.

**Calculator:** For the midterm and final exam, a non-programmable scientific calculator such as the Sharp E1-510Rtb, available at the bookstore, is 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:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](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.

In the event of health lock-down, we will switch from in-person exams to online exams. Tests and examinations will then be conducted using a remote proctoring service. 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>.

## 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](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.

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.

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 at <https://westernusc.ca/services/>.

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc 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 Counselling 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](mailto:ssc@uwo.ca).