

Physics 1501A - Enriched Introductory Physics I - Fall 2020

This course will cover the same material as other first-year physics courses, but with an eye to how these simple principles apply to and define many fascinating phenomena in our Universe. We will explore questions like...

- How and why does NASA use the gravity of a planet to send its spacecraft efficiently on to their destinations?
- How much do we know about the nature of space and time?
- How does a car transmission work and why is it needed?
- What is energy, and why is our society so concerned about running out of it?

If these questions sound interesting, then this is the first year physics course for you.

Calendar description: A calculus-based laboratory course for students intending to pursue further studies in science, particularly the physical sciences. Newton's laws, energy, linear momentum, rotations and angular momentum, gravitation and planetary motion.

Antirequisite(s): Physics 1021, 1028A/B, 1301A/B, 1401A/B, the former Physics 1020, 1024, 1026.

Prerequisite(s): Grade 12U Physics (SPH4U); Grade 12U Calculus and Vectors (MCV4U) or Mathematics 0110A/B.

Corequisite(s): Calculus 1000A/B or 1100A/B or 1500A/B or Applied Mathematics 1413.

Extra Information: 3 lecture hours, 3 laboratory/tutorial hours, 0.5 course.

Note: This course, together with Physics 1502A/B, is a suitable prerequisite for all modules in the Faculty of Science, for all modules offered by the basic medical science departments and for professional schools having a Physics requirement.

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 have the necessary prerequisites.

Instructor:

Paul Wiegert

Professor

Room 238, Physics and Astronomy Building (PAB)

You can reach me via e-mail at pwiegert@uwo.ca. When contacting me by e-mail, please use your UWO e-mail account. Other accounts (such as hotmail and yahoo) are often tagged as spam and may not reach me.

Office Hours: My usual office hours will be announced on the OWL website, and will be held virtually via zoom. You are welcome to drop by at the posted times. The zoom meeting will have a waiting room so you will not immediately connect to me if someone is already in the zoom meeting with me, but you

will be admitted as soon as possible. If the usual office hours time is not convenient, you can also send me e-mail if you would like to arrange a meeting.

Teaching Assistants: The TA(s) for this course, their contact info and their office hours will be posted on the course web site.

Format: This course will take place primarily online through Western's OWL Learning Management System, and primarily 'asynchronously' which means that students can interact with the materials on their own schedule and do not all have to log in at the same time.

Students should check OWL (<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. Students are responsible for checking OWL on a regular basis.

All course material will be posted to OWL: <http://owl.uwo.ca>.

If students need assistance, 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.

There are no fixed lecture times. The 'synchronous' activities will be the tutorials where all students will log in at the same time, every week, via zoom. In tutorials, after some introductory material from the instructor or TAs, students will then break up into small groups in zoom 'breakout rooms' to work on the tutorial worksheets together in real-time.

Professionalism and netiquette: It is expected that students will display the same standard of behaviour in all online interactions as they would in the regular classroom. Video interactions will be done in respectful language, in a quiet environment, without the presence of non-class members in the background, in appropriate clothing, etc. Failure to abide with these requirements may result in the barring of the student from such interactions and the loss of any associated marks. For a refresher on netiquette see <https://www.rasmussen.edu/student-experience/college-life/netiquette-guidelines-every-online-student-needs-to-know/>

The integrity of the course and the privacy of its participants is expected to be preserved. It is illegal to distribute, share in any public domain, or sell any course materials without prior written consent of the instructor.

Tutorials: Tutorial sessions are computer-based sessions where you will get to work through and experiment with physics computer simulations. Physics 1501A has tutorials hosted by the course's Teaching Assistants. They usually occur on the weeks between labs. The tutorials will be held on Monday afternoons from 2:30-4:30pm about every second week. The schedule is subject to change but four tutorials are expected Sep 21, Oct 5, Nov 9 and Nov 30.

The tutorials will take place virtually via zoom. In tutorials, after some introductory material from the instructor or TAs, students will then break up into small groups in zoom 'breakout rooms' to work on the tutorial worksheets together in real-time. Participation requires a webcam/microphone and a

stable internet connection. If you anticipate any problems along these lines please contact your professor. You are expected to attend tutorials, but if internet or other issues prevent you from logging in at the designated time, the tutorial work can still be performed and submitted without penalty with instructor permission.

Laboratories: *In order to pass the course, you must pass the laboratory component!*

Labs can be completed either in-person or online. There are four labs this year. If you are doing the labs online, you will do all four of them online. If you are doing the labs in person, you will do two of the labs online, and two in-person.

In-person labs: In-person labs are held Mondays, 2:30-5:30 pm in the Materials Science Addition (MSA) Building. A laboratory orientation lecture will be posted on the OWL site by the first week of September. You must visit the course OWL site and familiarize yourself with the contents of this lecture before attending your first lab class. The Physics 1501A laboratory timetable will be posted at the above lab OWL site. You must find your correct lab section, lab subsection, and the correct laboratory timetable before attending the first lab. Please attend the correct lab class on the correct date, as we do not give permission to attend lab classes outside your laboratory schedule. If you have difficulty following the timetable scheduled for your lab sub- section, please contact the laboratory coordinator at physlab1@uwo.ca

Online labs: See the course OWL site for more information

Other lab information: There are different first year laboratory manual packages which need to be purchased from the Western bookstore. Information on how to purchase the Lab Manual will be posted on the course OWL website. Note that Physics 1501A has the same package as Physics 1301A and Physics 1401A but it is different from Physics 1028A. Make sure you buy the correct laboratory package since it is not refundable.

Quizzes: The course will include two online quizzes. Date, time, and details are to be announced.

Textbook: The required textbook is the online version of University Physics with Modern Physics, 15th edition, by H. D. Young and R. A. Freedman (Pearson) available from the Western Bookstore. The e-textbook will be required for some of the course readings so other editions or textbooks cannot be substituted. A paper copy of the textbook may be ordered separately for an additional fee but is not required. Also required is purchasing access to the Mastering Physics website. The textbook and MasteringPhysics will be available from the Western bookstore as a single bundle: information on how to purchase the textbook and MasteringPhysics access will be posted on the course website.

MasteringPhysics: The textbook publisher provides a web-based instructional platform called MasteringPhysics which is required for this course. A portion of the class marks will come from performing Mastering Physics assignments. Access to MasteringPhysics will be included with your textbook if you buy it through the Western bookstore.

Students will need to set up an account on MasteringPhysics, and will need two pieces of information to do so: the course ID is MPWIEGERT2653318 and their UWO student identifier from their UWO email (for example, if your email is jsmith22@uwo.ca then your student ID is jsmith22). Students should log into <https://www.pearsonmylabandmastering.com/northamerica/masteringphysics/> and create an

account with their student ID and join the course ID above. Creating an account with an incorrect login ID may result in your grades not linking properly with the university grade book.

Perusall: A portion of the class marks will be assigned for performing the readings, for posing and answering questions, engaging with other students and making well-thought out comments on the Perusall website on a weekly basis. This is done via the Perusal tool which will be accessible from the course OWL site. Students do not have to create a separate Perusall account.

VoiceThread: In addition to the reading materials, short mini-lectures will be provided to illustrate key concepts via the VoiceThread app, which can be accessed via the course OWL website. A portion of the class marks will be assigned for engaging with other students and making well-thought out comments via VoiceThread on a weekly basis. Students do not have to create a separate VoiceThread account.

Zoom: There will be five tutorial sessions held synchronously, that is, students and instructor will all log in at the same time, via zoom. A link will be provided to the zoom event, which should be clicked on and the zoom app downloaded at the appropriate time. Students do not need to create a separate Zoom account.

Gradescope: Written tutorial worksheets in the course will be submitted via the gradescope.ca website. Students will receive an email when their accounts are set up with login information. The gradescope.ca website cannot be accessed directly from the OWL course website, nor should students attempt to set up their own accounts before receiving an email from Gradescope. Gradescope will accept scans or photos of handwritten assignment pages. These will be accessed by the TAs to grade, and marks and feedback will be returned to the student via Gradescope.

Grading:

Quizzes (OWL): 20%

Assignments (MasteringPhysics): 12.5%

Tutorial worksheets (Gradescope): 12.5%

Readings (Perusall): 20%

Participation (VoiceThread): 25%

Laboratories (online or in-person): 10%

Note: in order to pass this course, you must obtain (1) a grade of at least 50% over all course components AND (2) a grade of at least 50% on the Laboratories. If you fail to obtain a grade of 50% on either one, this failing grade will be adopted as your final course grade.

Please note: The Department of Physics and Astronomy may, in exceptional cases, adjust the final course marks in order to conform to Departmental policy.

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

Academic Consideration for Student Absence

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf

and for the Student Medical Certificate (SMC), see:

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

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar:

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

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

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, 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.

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online,

either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

Recording: Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

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>).

Support services: 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/>

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 Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

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/>.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.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.

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

Additional student-run support services are offered by the USC, <http://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.

This course outline is subject to change. Last updated Friday, September 11, 2020.