Physics 1301/1401A
Introductory Physics I
Course Information: Fall 2017

1. Course Description

An introductory calculus-based laboratory course in physics covering the foundational principles of
kinematics, force and motion, energy, linear momentum, rotation, torque and angular momentum,
gravitation, fluids.

0.5 course: 3 lecture hours per week, alternate weeks of 3 laboratory hours and tutorial hours

Antirequisite(s): Physics 1021, 1028A/B, 1301A/B/1401A/B*, 1501A/B, the former Physics 1020, 1024,
1026.
* Physics 1301A/B is an anti-requisite for Physics 1401A/B, and vice versa.

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

Note: The department recommends that students also take a concurrent course that includes Calculus.
Physics 1301A/B, together with Physics 1302A/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 having a physics requirement). Enrolment
in the concurrent Physics 1401A/B, and the subsequent Physics 1402A/B, are restricted to students in
the Faculty of Engineering.

Note: 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.

2. Learning Outcomes

• Apply basic laws of physics to solve physical problems
• Recognize how theory and experiment work together to expand knowledge
• Construct mathematical descriptions from wording to solving problems
• Convert complex problems into smaller steps and solve
• Use physical knowledge or intuition to determine whether the answer to a problem
  makes physical sense
• Develop critical thinking skills

3. Timetable

Physics 1301A/1401A is divided into 3 lecture sections with details as shown below.

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<thead>
<tr>
<th></th>
<th>Section 001</th>
<th>Section 002</th>
<th>Section 003</th>
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<tbody>
<tr>
<td>Physics 1301A</td>
<td></td>
<td></td>
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<tr>
<td>Physics 1401A</td>
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<tr>
<td>Lectures</td>
<td>Mon, Wed, Fri 1:30 pm–2:20 pm location WSC 55</td>
<td>Mon, Wed, Fri 9:30 am–10:20 am location NS 145</td>
<td>Mon, Wed, Fri 12:30 pm–13:20 pm location MC 110</td>
</tr>
<tr>
<td>Instructor:</td>
<td>Carol Jones</td>
<td>Andrea Soddu</td>
<td>Carol Jones (Course Coordinator)</td>
</tr>
<tr>
<td>E-mail:</td>
<td><a href="mailto:cejones@uwo.ca">cejones@uwo.ca</a>, <a href="mailto:asoddu@uwo.ca">asoddu@uwo.ca</a></td>
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4. Course Materials

The following course materials can be purchased at the UWO Bookstore:


The textbook package for Physics 1301A/1401A contains an access code for Mastering Physics, the accompanying on-line learning resources.

ISBN: 9780321975973

MasteringPhysics.com, an online resource containing ebook and problems. (The textbook package contains an access code for MasteringPhysics.com)

**Lab Manual:** *Physics Laboratory Manual 2017-2018 for Physics 1301/1401/1501/A.*

Be sure to buy the correct package, as it is not refundable. All three courses share the same manual.

**Calculator:** *Sharp EL-510RB Scientific Calculator*

This is the only calculator allowed in exams and tutorial quizzes.

**NOTE:** In addition, all online materials (lecture notes, tutorial material, access to interim grades, announcements, etc.) are available from the course OWL (Sakai) sites. To access this site, you will need to go to owl.uwo.ca and log in using your UWO username and password. One website will have all material for lectures and tutorials, and the other will cover the lab component of the course.

5. Course Content

The course content is outlined in the following tables. Note that this is a provisional list; the course outline and website will be updated as necessary (e.g., if sections are omitted).

| Term 1 |
|---|---|---|
| **Chapter** | **Sections** | **Topic** |
| Appendix | A2 | Short introduction to calculus: functions, derivatives, integrals |
| Appendix | A1 | Short Introduction to vectors |
| 1 | all | Measurements and Units |
| 2 | all | Motion in 1D |
| 3 | all | Motion in 2D & 3D |
| 4 | all | Force & Motion I |
| 5 | all | Using Newton’s Laws (Force & Motion II) |
6. Evaluation

Your final grade in this course will be derived according to:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>MasteringPhysics.com (4 of out 5)</td>
<td>12%</td>
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<tr>
<td>In-class problems and participation</td>
<td>4%</td>
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<tr>
<td>Tutorials-Exam Relevant Problems</td>
<td>4%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
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</tbody>
</table>

- There will be a **bonus** grade of 1% for students who register and complete the MasteringPhysics introduction quiz by the due date of **September 22, 2017** at midnight.

Grades will be posted regularly on the class OWL (Sakai) site. Any errors, or appeals to your scores, must be reported to your instructor in writing within **two weeks** of their initial posting.

**Important:** In order to pass Physics 1302B/1402B, a student must obtain 1) a passing mark in the laboratory component and 2) a mark of 50% or greater in the average of the exam grades. Specifically this means that students must obtain at least 35/70 of the marks allocated to the exams. Students failing the lab component of the course and/or the exam component will be assigned a final course mark of no more than 40%. The Department of Physics and Astronomy may adjust the final course marks in order to conform to Departmental policy.

7. Laboratories

Dr. Shailesh Nene (Material Science Addition, MSA M2203) is in charge of the laboratory. Direct all laboratory questions to him (e-mail physlab1@uwo.ca), **not to your instructor**.

Information on the laboratory component of the course is posted on the lab OWL website: [https://owl.uwo.ca/](https://owl.uwo.ca/) (PHYSICS 1301A 004 FW17 and [https://owl.uwo.ca/PHYSICS 1401A 003 FW17](https://owl.uwo.ca/PHYSICS 1401A 003 FW17))

**Laboratory Outline and Orientation Lecture**

A laboratory outline and orientation lecture will be posted on the lab OWL website by the first week of September. You must visit the OWL and familiarize yourself with the contents of this lecture **before attending your first lab**. The mandatory on-line laboratory assignment will be activated on Monday, September 11, 2017 (Refer to Lab Outline section from the lab OWL pages)
Laboratory Schedules
Each Physics 1301/1401A lab section may be divided into four laboratory subsections A, B, C and D, depending on the size of each lab section. The laboratory timetables for these lab sub-sections are posted at the above lab OWL website.

Laboratory subsection assignments will be posted on the lab website by last name. You must find your correct lab section, lab sub-section 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, Dr. Shailesh Nene (e-mail physlab1@uwo.ca)

In order to pass the course, a student must obtain a passing grade in the laboratory.

8. In-class problems and participation, on-line quizzes and tutorials

We will be using Learning Catalytics offered through Mastering Physics website for in-class problems and participation grades. Each week several problems and questions will be given in class and students will be asked to answer these questions. At first, this portion of the grade will be for participation by answering the questions asked. As the term progresses, extra credit will be given for answering correctly. There will be opportunities to participate each week and it will be possible to get the maximum grade of 4% if you participate and answered correctly 75% of the time when Learning Catalytics are used. Therefore, there will be no make-up questions for missed classes.

In the Tutorial sessions there will be exam relevant problems assigned and tutorial instructors will be present to help answer questions and introduce material. Attendance will be taken and your participation in the tutorials will account for the 4% portion of the tutorial grade. The maximum grade for the tutorial can be obtained as long as no more than one tutorial is missed. That is, you must be present and participate for 3 of 4 tutorials. There will be no makeups for missed tutorials.

Quizzes will be assigned on MasteringPhysics, an online tutorial and homework management system from Pearson, the textbook publisher. There will be 5 online quizzes and the best 4 will contribute to this portion (12%) of your grade.

To use MasteringPhysics, you must register online at http://masteringphysics.com using a) the code included with your textbook, b) the course code XXXXXXXXXXX, and c) your student ID.

9. Examinations: Midterm and Final

Exam times will be posted on the course OWL site when available. Students needing to make travel arrangements are advised to book a travel date after the end of the examination period.

The midterm exam has been scheduled for Saturday, October 21, 2017 at 9:00 am to noon.

No extra written material (with the exception of a one page formula sheet), and no PDAs, advanced calculators, computers, cell phones, music players, devices capable of connecting to the internet, etc., are permitted during exams.

Exams will consist of a combination of multiple-choice questions designed to test conceptual understanding of topics covered in class and numerical problems (which may consist of multiple parts) that test problem-solving abilities.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.
Calculators
The only calculator that may be brought into an exam is the Sharp EL-510RB calculator, which is available from the UWO Bookstore. The only exception is any Sharp model EL-5xx (where xx is typically 00 or 10R). If you are in doubt about your calculator, show it to us before the examination date.

Accommodations for Religious Holidays
When course scheduling unavoidably conflicts with religious holidays that a) require an absence from the University or b) prohibit or require certain activities (i.e., activities that would make it impossible for the student to satisfy the academic requirements scheduled on the day(s) involved), no student will be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and instructor involved, they should consult the appropriate department chair and, if necessary, the student's Dean.

It is the responsibility of such students to inform themselves concerning the material covered in classes from which they are absent and to take appropriate action.

A student who, for either of the situations outlined in paragraph one above (a or b), is unable to write examinations and term tests on a Sabbath or Holy Day shall give notice of this fact in writing to his or her Dean as early as possible, but not later than November 15 for mid-year examinations and March 1 for final examinations, i.e., approximately two weeks after the posting of the mid-year and final examination schedule, respectively. In the case of midterm tests, such notification is to be given in writing to the instructor within 48 hours of the announcement of the date of the midterm test. If a Special Examination is offered as an alternative means to satisfy the academic requirements, the instructor(s) in the case of midterm tests and the dean in the case of final examinations will arrange for special examination(s) to be written at another time. In the case of final examinations, the accommodation must occur no later than one month after the end of the examination period involved. It is mandatory that students seeking accommodations under this policy give notification before the deadlines in order for Faculty to accommodate these requests.

For purposes of these policies, the University has approved a list of dates that are recognized religious holidays that require members of those religions to be absent from the University; this list is updated annually and is available at Departmental, Deans’ and Faculty advising offices.

10. Make-up Policy

a) Lab Marks. Please refer to ‘Evaluation’, ‘Absences from the laboratory’ and ‘Make-up lab policy’ in the Lab Outline given on the lab OWL pages.

b) Quizzes (on-line) We anticipate that 5 online quizzes will be given over the course of the fall term. Your best 4 tutorial quizzes will count towards this portion of your grade. Typically, we provide about a week to complete the on-line quizzes and given you can miss one, there will be no make-ups. For the in-class problems, we will allow students to miss four classes and still receive the maximum grade on this portion of students grade. Therefore, there will be no make-ups for the in-class and participation grades.

If you miss more than 1 on-line quiz and 4 in-class problem sessions and want to be excused, you must provide documentation for each absence to the Associate Dean, Faculty of Science, who will determine if relief is warranted. No make-ups will be given for the Quizzes or the in-class Problems.

d) Midterm Examinations. There will be one make-up test that may be written only with the permission of the Associate Dean, Faculty of Science.

e) Final Examination. In accordance with Senate Policy, a Special Examination will be held within thirty days of the regular final examination for students who are unable to write the regular examination for medical or other documented reasons. Requests for such a Special Examination must be made to the Associate Dean, Faculty of Science.
If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:

http://westerncalendar.uwo.ca/2017/pg132.html

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

http://www.uwo.ca/univsec/academic_policies/index.html

11. Class Website

All course information such as the most recent version of this document, lecture schedules, exam information, lecture notes, marks, etc. is available on the secure OWL (Sakai) site. To access this site, you will need to go to:

http://owl.uwo.ca

and log on using your UWO username and password. If you need information about setting up and using your account (or forwarding your mail from uwo.ca to other mail services), information can be found at the ITS website (http://www.uwo.ca/its/). Some aspects of these websites require Adobe Acrobat Reader (5.0 or higher), which is available for free.

12. Scholastic Offenses

Cheating
University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalty, which may include expulsion from the program. If you are caught cheating, there will be no second warning. Cheating includes having available any electronic devices other than a watch and the Sharp calculator discussed previously above during a test or exam. You may not have a cell phone accessible during exams, even to use as a calculator or watch. Complete information on the University policy on academic offenses can be found at:

http://www.westerncalendar.uwo.ca/2017/print_pg113.html

Plagiarism
Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

13. Classroom Conduct

Disruptive behaviour will not be tolerated in class (or the course OWL chat room). Please respect the rights of your classmates to benefit from the lecture by limiting your conversations to those essential to the class. Students who persist in loud or rude behavior will be asked to leave.

14. Help
Students who are in emotional or mental distress should refer to Mental Health@Western http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.
15. 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 Chair or the Associate Chair of Undergraduate Affairs (for contact information see [http://www.physics.uwo.ca](http://www.physics.uwo.ca)).

16. Contacting Us

The simplest way to contact us outside of lectures is via your UWO e-mail account. Please allow 2–3 working days for a response. *We will not respond to e-mails from addresses that do not end in “@uwo.ca”.*

17. Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111, extension 82147 for any specific question(s) regarding an accommodation.

“All of physics is either impossible or trivial. It is impossible until you understand it, and then it becomes trivial.”

_Ernest Rutherford, 1871 to 1937_