

# Physics 1301/1401A      Introductory Physics I

## Course Information: Fall 2019

### 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 2 tutorial hours.

**Antirequisite(s):** [Physics 1021](#), [Physics 1028A/B](#), [Physics 1401A/B](#), [Physics 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](#), are suitable prerequisites 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, is 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. Timetable and Contact Information

Physics 1301A&1401A are divided into 3 lecture sections with details as shown below.

	Physics 1301A-Section 001	Physics 1301A-Section 002 Physics 1401A-Section 001	Physics 1301A-Section 003 Physics 1401A-Section 002
<b>Lectures</b>	Mon, Wed, Fri 1:30 pm–2:20 pm location WSC 55	Mon, Wed, Fri 9:30 am–10:20 am location NS 145	Mon, Wed, Fri 12:30 pm–1:20 pm location NS 1
<b>Course Instructor</b>	<b>Prof. Mahi Singh</b>	<b>Prof. Wayne Hocking</b> (Course Coordinator)	<b>Prof. Mahi Singh</b>
<b>Instructor's e-mail</b>	<a href="mailto:msingh@uwo.ca">msingh@uwo.ca</a>	<a href="mailto:whocking@uwo.ca">whocking@uwo.ca</a>	<a href="mailto:msingh@uwo.ca">msingh@uwo.ca</a>
<b>Office</b>	PAB116	PAB 304	PAB 116
<b>Phone</b>	519-661-2111 ext86427	519-661-2111 ext 83652	519-661-2111 ext 86427
<b>Course administrator</b>	<b>Dr. Maryam Tabeshian</b> <a href="mailto:intphys1@uwo.ca">intphys1@uwo.ca</a>		
<b>Course email</b>	<a href="mailto:intphys1@uwo.ca">intphys1@uwo.ca</a> (for general inquiries)		
<b>Course Webpage</b>	<b>OWL:</b> <a href="https://owl.uwo.ca/">https://owl.uwo.ca/</a> (Western password required.) Course link: <b>PHYSICS 1301A 002FW19</b> (For ALL * students in 1301 and 1401) *Note that the OWL course title mentions only 1301 - reference to 1401 is NOT included in the title, but if you are an Engineering student taking 1401, this IS also your course!		

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

### **3. Course Materials**

**Textbook:** *University Physics, Volume 1*

by Hugh D. Young & Roger A. Freedman 15<sup>th</sup> edition, Pearson, 2020.

**Required:** An access code for Mastering Physics, the accompanying on-line learning resources, is included in the textbook package. It can also be bought separately.

The Pearson website for Mastering Physics is:

<https://www.pearsonmylabandmastering.com/northamerica/masteringphysics/>

**Lab Manual:** *Physics Laboratory Manual 2019-2020 for Physics 1301A/1401A/1501A.*

All three courses share the same lab manual. The lab manual is not refundable.

**Calculator:** *Sharp EL-510RNB or EL-510RN Scientific Calculator* (non-programmable)

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

There are two websites for Physics 1301/1401. One website has all materials for lectures and tutorials, and the other covers the lab component of the course.

**Course webpage:** Lecture notes, tutorial material, access to interim grades, announcements, etc. are available from the course OWL site. To access this site, you will need to go to <https://owl.uwo.ca/> and log in using your UWO username and password.

**Laboratory webpage:** Lab schedule, lab outline, lab orientation, lab marks and other lab information are available from the lab OWL site (See Section 7).

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. Important updates to OWL will be notified via email.

### **4. Course Content**

The course content is outlined in the table below. Please note that minor changes may be necessary as the course progresses. Such changes will be announced in class, and the webpage will be updated.

<b>Week</b>	<b>Chapter</b>	<b>Topic</b>
Week 0: Sep 6	Introduction Appendix A, B, C, E, F	A: The International System of Units; B: Useful Mathematical Relations; C: The Greek Alphabet; E: Unit Conversion Factors; F: Numerical Constants; Prefixes for Powers of 10.
Week of Sep9	1	Units, Physical Quantities, and Vectors
Week of Sep16	2	Motion Along a Straight Line
Week of Sep23	3	Motion in Two or Three Dimensions
Week of Sep 30	4	Newton's Laws of Motion
Week of Oct 7	5	Applying Newton's Laws
Week of Oct 14	6	Work and Kinetic Energy
Week of Oct 21	7	Potential Energy and Energy Conservation
Week of Oct 28	8	Momentum, Impulse and Collisions
Week of Nov 4: Fall Reading Week		

Week of Nov 11	9	Rotation of Rigid Bodies
Week of Nov 18	10	Dynamics of Rotational Motion
Week of Nov 25	12	Fluid Mechanics
Week of Dec 2	13	Gravitation

## **5. Evaluation**

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

<b>Assessment</b>	<b>Weight</b>
<b>Mastering Physics (MP) online quizzes</b> (Count best 2 out of 3 MP quizzes. Each quiz 3%)	6%
<b>Tutorials</b>	
<b>Assignment 1</b>	4%
<b>Quiz 1, Quiz 2</b> (Count both quizzes, Each 5%)	10%
<b>Laboratory</b> (Count all 4 labs)	10%
<b>Midterm Exam</b>	30%
<b>Final Exam</b>	40%
<b>Total</b>	<b>100%</b>

Grades will be posted regularly on the class OWL (Sakai) site. Grades for Mastering Physics Quizzes will appear in the Gradebook of the "Mastering Physics" website provided by Pearson (the textbook publisher). Those marks will be transferred to OWL course site only at the end of the term.

Any errors, or appeals to your scores, must be reported to the course administrator in writing (via email to [mtabeshi@uwo.ca](mailto:mtabeshi@uwo.ca)) within **two weeks** of their initial posting.

**Important: In order to pass Physics 1301A/1401A, 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 two exam grades**. This means that students must obtain at least 35/70 of the marks allocated to the midterm and final 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.

## **6. Tutorial assignments, Tutorial quizzes, On-line Mastering Physics quizzes and Chapter-end problems**

The tutorial assignments, tutorial quizzes and "Mastering Physics" online quizzes will cover problems from all the chapters up to and including "Dynamics of Rotational Motion". The last 2 chapters (Fluid Mechanics and Gravitation) will be given after the tutorials are complete, so cannot be tested in the tutorials but may be tested in the final examination. These problems have been selected to teach you problem-solving skills. The two tutorial quizzes will employ a similar format to exam problems.

**6(a). Tutorial sessions:** There will be four in-class, 2-hour tutorial sessions in which one of them is an assignment and two are quizzes. Attendance will be taken and your participation in all 4 tutorials will be recorded. Your tutorial subsection will be the same as your lab subsection (see Section 7 below). The tutorial timetable will be posted on the course OWL site before the first tutorial (i.e., before Sep. 16).

In the first tutorial, the full 2 hours will be spent on working through problems with your TA, but no tests will be given.

For the remaining 3 tutorials, the first hour of the tutorial period is spent working through problems relevant to the lecture material with the guidance of a Teaching Assistant, followed by an hour of either an assignment or a quiz as shown below.

**Assignment 1: Course weight 4%:** You will be asked to solve a few physics problems in the second half of the tutorial period. In this assignment: you may work alone or work together with the students sitting next to you and finally come up with solutions to the problems. Your tutorial instructor will be present to help answer questions. Each student must write their own answers and submit an answer sheet to the TA at the end of the tutorial session. Assignment 1 will be marked as pass (full marks) or fail (zero marks). You are expected to complete all the questions to receive a pass mark.

**Tutorial Quizzes 1 and 2: Total course weight 10% (sum the marks from both in order to determine your grade):** Each tutorial quiz contains one multiple-part long problem and a few multiple-choice questions; this format is similar to the problems given in exams. Discussions with other students are not allowed when writing quizzes. Quizzes will be graded according to a marking scheme which will be given in the quiz.

**Absences:** Refer to **Section 10: Make-up Policy** in this document.

**6(b). Online Mastering Physics Quizzes: Course weight 6% (count best 2 out of 3 for your grade)**

Quizzes will be assigned on Mastering Physics, an online tutorial management system from Pearson, the textbook publisher. There will be 3 online quizzes and the best 2 will be counted for your grade.

To use MasteringPhysics, please register online at (please do this after the first lecture),

<https://www.pearsonmylabandmastering.com/northamerica/masteringphysics/>

You will need the following information when registering:

- (a) the Mastering Physics code that comes with your textbook package
- (b) your Western email
- (c) course code (This will be given to you during the first lecture)

Do not register with any other email accounts such as gmail, yahoo,..etc because if you do, your

grades may be lost when transferring grades from the Pearson site to Western's OWL site. [OWL recognizes only the email addresses ending with @uwo.ca.](#)

More information on Mastering Physics quizzes will be given to you during the first lecture.

### **6(c). Chapter-end Problems: Homework**

For each chapter, a list of selected homework problems from the chapter-end problems will be posted on OWL. It is important that you try the chapter-end problems to practice the concepts covered in lectures and to learn problem solving skills. You may discuss difficult homework problems during tutorial sessions or TA office hours. No marks are assigned for homework problems; however, our experience shows that the students who complete chapter-end problems gain experience in problem solving, and hence generally do better in exams.

## **7. Laboratories**

Lab contact information: **Dr. Shailesh Nene**, Lab Coordinator, Material Science Addition M 2203, e-mail: [physlab1@uwo.ca](mailto:physlab1@uwo.ca), phone 519-661-2111 extension 80541

Direct *all* laboratory questions to Dr. Shailesh Nene (e-mail [physlab1@uwo.ca](mailto:physlab1@uwo.ca)), not to your course instructor.

Information on the laboratory component of the course is posted on the lab OWL website.

**OWL:**<https://owl.uwo.ca/> Western password required.

OWL **lab link** for Physics 1301A: Go to OWL and click the button: **PHYSICS 1301A 004 FW19**

OWL **lab link** for Physics 1401A: Go to OWL and click the button: **PHYSICS 1401A 003 FW19**

### **Laboratory Outline and Orientation**

A laboratory outline and an orientation document will be posted on the lab OWL website by the first week of September. You must visit the lab OWL site and familiarize yourself with the contents of these two documents *before attending your first lab*.

**On-line laboratory assignment:** This mandatory lab assignment will be available during the following period before the first lab.

**Opens: Monday, September 9, 2019, 09:55 a.m.**

**Closes: Friday, September 20, 2019, 10:05 p.m.**

Failure to exceed 70% in this lab assignment will result in getting a **ZERO** mark for the Measurements Lab, irrespective of completion of the Measurements Lab. Refer to the Lab Outline section for more information.

### **Laboratory Schedules**

Each Physics 1301/1401A lab section may be divided into four laboratory and tutorial subsections A, B, C and D, depending on the size of each lab section. The laboratory timetables for these lab subsections will be posted at the above lab OWL website. Laboratory subsections A, B, C and D will be posted on the lab website by last name. If you have difficulty following the lab timetable scheduled for your lab sub-section, please contact the laboratory coordinator, Dr. Shailesh Nene (e-mail [physlab1@uwo.ca](mailto:physlab1@uwo.ca))

**Laboratory Marks:** All 4 labs will be counted towards your final lab mark. You must attend and pass at least 3 out of 4 labs in order to pass the laboratory component of the course, and therefore you

may not miss more than one lab. Refer to the Lab Outline section for more information.

*In order to **pass** the course, a student **must** obtain a passing grade in the laboratory. If you fail the lab, you will fail the course irrespective of the marks obtained for the course component.*

## **8. Examinations: Midterm and Final**

Exam times will be posted on the course OWL site when available. The midterm exam for Physics 1301 and Physics 1401 has been scheduled to be on:

**Saturday, October 19, 2019 from 12:30 pm to 3:30 pm. Exam rooms and seating arrangement will be announced later on OWL.**

**The following items are not permitted during the exam:**

Extra written material, advanced calculators, programmable calculators, computers, cell phones, music players, devices capable of connecting to the internet, etc.

The only calculators that may be brought into an exam or quizzes is the **Sharp EL-510RNB or EL-510RN Scientific Calculator** (non-programmable).

Exams will consist of a combination of multiple-choice questions and numerical problems with multiple parts. Some multiple-choice questions are designed to test conceptual understanding of topics covered in class, while others may contain short calculations. Numerical problems with multiple parts are designed to test your problem-solving abilities. A formula sheet will be provided in the exam.

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. We will use different versions of the exam to reduce the possibility of such incidents.

## **9. Academic Accommodation**

Students seeking academic accommodation for missed assignments or exams on medical grounds or other reasons are required to provide valid documentation to the Academic Counselling office of their home Faculty. Please submit documentation within one week of your absence.

Academic accommodation cannot be granted by the course instructor or the department. Only the accommodation approved by an academic counsellor will be considered. If you miss an assignment for a valid reason, contact the academic counselling section of your home faculty immediately after missing the assignment. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved. See **Section 10: Make-up Policy** for more information.

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

[http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_12](http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_12)

**The Academic Calendar has useful information at the following links:**

Academic rights and responsibilities:

[http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_10](http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_10)



Academic Accommodation for Students with Disabilities:

[http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_10](http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_10)

Accommodation for religious holidays:

[http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_16](http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_16)

## **10. Make-up Policy**

**(1) Midterm Examination (make-up):** There will be one make-up Midterm exam that may be written only with the permission of the Academic Counselling office of your home faculty. The time and date for the midterm make-up exam will be announced on the course OWL site later.

**Final Examination (make-up):** 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 final examination for medical or other documented reasons. To schedule a make-up final exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam) and inform your course instructor.

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation".

[http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)

**(2) Tutorials: Assignment and Quizzes:**

**(a) Assignment 1: No make-up assignment.**

There will be no makeup assignments for missed tutorial assignments. You may miss an assignment only with accommodation approved by academic counseling. If you are given special accommodation, your final mark will be taken out of 96 (i.e. the assignment portion will be removed) and then rescaled by multiplying by 100/96.

**(b) Tutorial Quizzes 1 and 2: One make-up per quiz may be allowed with approved accommodation.**

If you miss a tutorial quiz for compassionate or medical reasons, or other reasonable cause, submit documentation to academic counseling immediately and contact your course administrator via email. (Forgetting to attend the tutorial is not sufficient excuse to obtain special accommodation). If academic counseling approves accommodation, you may speak to the course administrator ([mtabeshi@uwo.ca](mailto:mtabeshi@uwo.ca)) and, if it is practical, be assigned to an alternate (later) tutorial session in the week(s) during which this tutorial is active. If this is not practical (e.g. if this tutorial slot has expired before you can get a chance to take the quiz), then your quiz mark will be set equal to the mark that you receive in the next formal examination (i.e. the midterm for quiz 1, or the final exam for quiz 2).

**(3) Mastering Physics (MP) online Quizzes: No makeup MP quizzes.**

We will count two MP quizzes out of 3. Typically, we provide about a week to complete the online quizzes and given that you can miss one, there will be no make-up Mastering Physics quizzes. If you miss more than one MP quizzes, discuss your situation with the course administrator.

We advise you to complete online Mastering Physics quizzes without waiting until the last

moment in order to avoid internet problems or any other unforeseen situations. It is your responsibility to use a reliable internet service and a device for these quizzes. Do not forget to click the "Submit" button on completion.

#### (4) Laboratory Marks:

Please refer to 'Evaluation', 'Absences from the laboratory' and 'Make-up lab policy' in the **Lab Outline** given on the lab OWL page.

*Please note that any work missed without approved accommodation from academic counseling will be assigned a zero mark.*

## **11. Academic Policies**

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

### **email account:**

In accordance with the 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 student to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Your username (i.e. email address without @uwo.ca) is used to identify you as a Western student and, therefore, protect your email password to avoid any misuse of your email by other people.

### **Scholastic Offenses**

**Cheating:** University policy states that cheating is a scholastic offence. The committing 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. Complete information on the University policy on academic offenses can be found at:

SCHOLARSTIC DISCIPLINE FOR UNDERGRADUATE STUDENTS

[http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page\\_20](http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#Page_20)

**Plagiarism:** Plagiarism is a major academic offence (see the above link in the Academic Calendar). Students must write their essays and assignments in their own words, even in group work (e.g. as described above for tutorial assignments). This applies for writing lab reports as well. You must not copy calculations or the conclusion page from your lab partner or any other students doing the same lab.

The academic penalties for scholastic offences can be severe, and **far outweigh any perceived benefits to be gained by such activities.**

## **12. Classroom Conduct**

Disruptive behaviour will not be tolerated in class or in the course OWLchat 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 the classroom.



### **Western University Code of Conduct:**

Upon registration, students accept the rights and responsibilities associated with membership in the University's academic and social community. Information on code of conduct can be found here:

[http://studentexperience.uwo.ca/student\\_experience/studentconduct.html](http://studentexperience.uwo.ca/student_experience/studentconduct.html)

Western University student code of conduct:

<https://www.uwo.ca/univsec/pdf/board/code.pdf>

## **13. Support Services**

### **Mental health Services:**

Students who are in emotional or mental distress should refer to MentalHealth at Western, <http://www.uwo.ca/uwocom/mentalhealth/> 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>

### **Student Development Centre:**

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.

## **14. Complaints and Suggestions**

We welcome your feedback. If you have a concern or a suggestion, please contact initially the person most directly concerned; this will usually be your instructor. If that is not satisfactory, or if there is something bothering you more generally, talk it over with the Physics & Astronomy Department Chair or the Associate Chair of Undergraduate Affairs. Contact information: <http://www.physics.uwo.ca>

## **15. 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 sent from non-Western email addresses.*

When sending email with inquiries to your course instructor, please include the following: Your first name and last name as in the class list (we cannot identify you with nick names or names other than what you have used for registering in the course); your student number; and your concern.

## **16. Accessibility Statement**

Please contact the course instructor if you require material in an alternate format, or if you wish to inquire about any other arrangements which might 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. The weblink is: <http://www.sdc.uwo.ca/ssd/>

## **17. Science Student Donation Fund (SSDF)**

Many lab equipment items you will be using in the first year physics laboratory in this course are supported by the Science Student Donation Fund. If you are a BSc or BSc 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). Grants from this Fund have allowed for the purchase of important lab equipment integral to teaching this course. We are thankful to our students for making it possible to upgrade our undergraduate teaching labs regularly, which helps us maintain a high quality of teaching. For further information on the process of awarding grants from the SSD Fund, or details about 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).

(Please note that, if you prefer, you may opt out of the Science Student Donation 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.)

**Important Notice:**

This course outline is a living document that may be updated throughout the course. Such updates will be announced in class, and the latest version will be posted on OWL. The version number can be found at the bottom of each page. Please refer to the most recent version of this document.

*End of the Course Outline for Physics 1301A/ Physics 1401A, FALL 2019.*