



Department of Physics  
University of Toronto

# Introduction to Physics I

PHY131-H1S  
**Course Outline: Winter 2010**



Jason Harlow

Welcome! The topics of this first university physics course include motion, force, rotation, momentum, energy, gravity, friction and drag, oscillations, fluids and elasticity. Along the way we will be using motion diagrams, vectors, free-body-diagrams, error analysis and problem solving techniques to deepen our understanding of physics, science and the universe, and gaining hands-on experience with physical phenomena in the Practicals.

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## Instructor:

**Jason Harlow** says: *“My Ph.D. research was in Astronomy and Astrophysics. Since 2004 I have been working at U of T in the field of Physics Education Research. I am interested in studying how we learn and how best to teach physics at the undergraduate level. I look forward to working with you and I hope you enjoy the course!”*



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**Office:** MP129A (in the “Physics Teaching Group” office of the 1st floor of the North Wing of McLennan Labs, 60 St. George St.)

**Office Hours:** Mondays 2-3 p.m., Fridays 9-10 a.m. In addition to these hours, you have are invited to call or email for an appointment, or just drop by my office.

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**Responding to Emails:** I will endeavour to respond to email inquiries from students within 2 days. If you do not receive a reply within this period, please resubmit your question(s) and/or phone (leave a message if necessary).

The course web-site is available at:

<http://portal.utoronto.ca>

It can also be found via the URL: <http://www.physics.utoronto.ca/~jharlow/teaching/phy131s10/>.

**Course Administrator:** April Seeley Office: MP129, Phone 416-946-0531, Email: [seeley@physics.utoronto.ca](mailto:seeley@physics.utoronto.ca)

**Practicals Technologists:** Larry Avramidis, Lilian Leung, Phil Scolieri, Rob Smidrovskis, Office: MP127.

**PHY131/132 Course Coordinators:** Pierre Savaria and Vatche Deyirmenjian, Office: MP129

## What you will need

What you need to obtain for this course:

- Required Text: “**Physics for Scientists and Engineers**” 2nd Edition (©2008) by **Randall Knight**. This course will cover Chapters 1-12, 14 and 15. (U of T Bookstore charges \$142 for this book new. All new book purchases come with a MasteringPhysics account which lasts 1 year.)
- An **account on [www.masteringphysics.com](http://www.masteringphysics.com)**, which comes with the purchase of the new text. If you have a used text or your account is expired, you can purchase an account separately at the U of T Bookstore for \$36. Weekly online homeworks will be assigned using this web-site.
- An **iclicker** personal response system (looks like a white remote control), which is available at the U of T bookstore. (New \$42 or used \$32) You can register your clicker to your at [www.iclicker.com](http://www.iclicker.com) using your student number. In-class quizzes and surveys will be given during classes using this device.
- A **calculator**. This need not be a graphing calculator but it should have SIN, COS, TAN on it as well as EE or EXP. You should be able to find one for less than \$15. A calculator will be an allowed aid during the tests and exam.

## Marking scheme:

Final Exam	40%
Term Test 1 on Feb. 2 evening	15%
Term Test 2 on Mar. 16 evening	15%
Online <a href="http://www.masteringphysics.com">www.masteringphysics.com</a> homework	9%
Work performed during Practicals	12%
Written Team Homework Assignments, assigned during Practicals	5%
Class Participation, In-Class Questions	4%

**Class Participation / In-Class Questions:** Every day I will be surveying the class or asking some kind of informal questions based on the assigned reading, using the i-clickers. Your participation in these In-Class Questions using your clicker remote will count for one point per class you attend. Collaboration with others is **allowed** and even **encouraged** during these informal questions, but you must have your own remote and select your own vote in order to obtain class participation marks. The marks will be assigned based on effort, not accuracy. You *must* do your reading before coming to class in order to get the most out of these questions! There are 24 classes throughout the semester, but students will all be held to a maximum of 20 points, which is worth the full 4%. So any student may miss, fail to participate, or forget his or her clicker in up to 4 classes and have no penalty. Also, students who joined the class late and therefore missed one, two, three or even four of the first classes. If you miss class for 5 or more classes throughout the semester, you will lose 1/20<sup>th</sup> of 4 percent for every class you miss. If you are in this situation and have a valid excuse for missing more than 4 classes, please speak to me and I will arrange to have your mark adjusted. If your Final Exam percentage mark is higher

than your total Class Participation mark, your final exam mark will replace your In-class clicker mark. This would effectively make the final exam worth 44% of your course mark, and Class Participation worth 0% accordingly.

### **Important PHY131 Dates to put on your calendar:**

- **Jan. 4** – First Class at 11:00am
- **MasteringPhysics** assignments due by 11:59pm on the following dates, all Wednesdays: Jan. 13, 20, 27, Feb. 24, Mar. 3, 10, 31.
- **Jan. 14 or 15** – Weekly 2-hour Practicals begin in MP125-C
- **Feb. 2, 6:00pm** – Test 1
- **Feb. 11 or 12** – Team Written Problem Set #1 is due in Practicals
- **Feb. 12** – Arts and Science Posts December Exam Schedule
- **Mar. 16, 6:00pm** – Test 2
- **Mar. 25 or 26** – Last Practical, Team Written Problem Set #2 is due in Practicals
- **Apr. 7-23** – A 3 hour Final Exam some time in this period

### **Tests and Exam**

Two 80-minute tests will be held on February 2 from 6:10pm to 7:30pm and March 16 from 6:10pm to 7:30pm. Room location will be posted on the course web-site at least five days before. Both the tests and exam will involve a combination of multiple choice and written questions, which test your understanding of course material and ability to think and apply what you have learned to simple problems. A pocket calculator with no communication ability and a 8.5"×11" double-sided piece of paper with your own hand-written notes will be permitted during the test and exam. **Two pieces of paper are allowed on the exam. [- note added 4/12/2010]**

You are expected to take notice of the date and time of the two mid-term tests when you enrol in other courses and choose practical sections. It is the responsibility of students to arrange their course schedule accordingly. An alternate sitting will be scheduled just before the main sittings of the mid-terms and will be reserved exclusively for students who can demonstrate an unavoidable conflict with another academic activity at UofT. Once an announcement has been made in class and on the course web-site that registration for the alternate sitting has begun, such students must register with the Course Coordinator's office in MP129 in person, before the registration deadline. In the event that you miss a test for medical reasons, you should obtain a doctor's certificate on the official Student Medical Certificate. Please submit your documentation without delay to the Course Coordinator office in MP129. If you have concerns about your test mark, please bring them to the attention of me without delay as they will not be considered later than 7 days after the test is handed back.

A 3-hour final examination, administered by the Faculty of Arts & Science, will be held during the April examination period at a time specified by the Faculty and announced by mid February. If you miss the exam, or if you have concerns about its marking, you must contact the Faculty of A&S and follow their procedures.

At a test or exam, you will not be allowed to carry on you any phone, iPod, Blackberry, or any communication device whatsoever. These must be switched off completely and left in your bag. Please refer to rule 7 in the Rules and Regulations section of the Arts and Science Calendar.

It is strongly advised not to engage in any behaviour that might be construed by the invigilators for the test/exam as an attempt to obtain information from another candidate or test/exam paper. Invigilators are authorised to assign candidates whose behaviour they deem suspicious to another seat

where they may finish writing the test/exam. The matter will then be referred for further investigation either to the Course Coordinator (for the test), or to the Faculty (for an exam), as set out in the Code of Behaviour on Academic Matters. To put it more succinctly, candidates may look up for inspiration, down in discouragement, but emphatically not sideways for information.

At the end of a test or exam, please stop writing immediately when asked to do so by the invigilators, and remain seated until all papers have been collected. Filling circles on your answer sheet is no longer allowed from that moment.

### MasteringPhysics

I recommend that you do MasteringPhysics homework completely on your own. The tutorials offered on MasteringPhysics include extensive hints which I recommend that you open, and multiple attempts are allowed if you get it wrong the first time. I recommend you use scrap paper and a pen to work through the problems “offline”, similar to how you would work on them for a test or exam.

- Go to <http://www.masteringphysics.com/>
- Choose **Mastering Physics for Knight Physics for Scientists and Engineers**.
- Click on **Register**.
- As part of the textbook package for PHY131/132, you bought a *Student Access Kit* for the software. Use the Access Code in the kit.
- You will be asked for your name. Use the exact same name that you gave on ROSI.
- You will need to know that the Dept. of Physics postal code is: **M5S 1A7**.
- You will choose a login and password. They will provide you with access to year.
- You will be asked for the course ID: it is **MPPHY131S10**
- You will be asked for a *Student ID*. This should be **your 9-digit student number**. You can not change this later, so be sure to type it carefully.
- Click on **Assignment List** in the upper-left corner of the screen to see the available assignments.

**Practicals:** The first Practical sessions are **January 14 and 15** in MP125-C. Please see the course web-site for schedule.

Here are the Practical components and their weights:

1. **Notebook Mark 1 (0% of course)**. After the first Practical the lab books will be collected and marked. However, this mark will not count towards your Practical mark. Instead it is intended to make our standards and requirements clear to you.
2. **Notebook Mark 2 (6% of course)**. After Practical Session 5, a selection of the activities from Practical Sessions 2-5 will be chosen to be marked. The decision of which Activities will be marked will be chosen more-or-less randomly after the books have been collected. All Teams will have the same Activities marked.
3. **Notebook Mark 3 (6% of course)**. At the end of the term a selection of the activities from Practical Sessions 6-10 will be chosen to be marked. The decision of which

Activities will be marked will be chosen more or less randomly after the books have been collected. All Teams will have the same Activities marked.

All teams should stay for the entire 110 minutes during each week of Practicals. If a student arrives more than 20 minutes late (ie later than 30 minutes past the hour), then he or she is counted as absent for that day. If a student leaves more than 10 minutes early, he or she is counted as absent for that day.

*Cube of Absences Rule:* Attendance at the Practical is vital for your learning. If you do not attend, you will be letting down your team-mates. The Practicals mark (worth 12% of the course mark) will be converted to a mark out of 100. The number of absences each student has will be cubed and deducted from this total out of 100. Effectively, this means that one absence generates a 1% penalty in Practicals mark. Two absences generates an 8% penalty. Three absences generates a 27% penalty, etc.

*If You Have Time Activities (IYHT):* IYHT Activities should not be attempted by any teams until they have spoken to a TA and obtained permission. For each Notebook Mark which counts, one IYHT activity will be randomly selected along with the regular activities. Teams that did well on the chosen IYHT get a 0.5-point bonus, while teams that didn't do it or tried but didn't do well on it get no bonus points.