PHY131H1F "Introduction to Physics I"
Syllabus: Fall 2015

[Most recent update: November 26, 2015]

Welcome! In this course you will learn about Newtonian mechanics, uncertainty analysis, oscillations and waves. Over the semester I hope that you will improve your problem-solving skills using conceptual reasoning and mathematics, learn more about making careful measurements which include uncertainties, and practice working effectively in teams.

Contacts

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Practicals Coordinators: Andrew Meyertholen and Stephen Foster **Office:** MP129A	**Course Coordinator:** Xingxing Xing **Office:** MP129D
Course Administrator: April Seeley **Office:** MP129 **Office Hours:** M-F 8:30-1:00 and 2:30-3:50 **Voice Landline:** 416-946-0531 **Email:** phy131@physics.utoronto.ca	

Web Site: https://portal.utoronto.ca/ **Email:** phy131@physics.utoronto.ca

Meeting Times

Lectures are on Mondays and Wednesdays either from 11:10am to 12:00pm in Convocation Hall (L0101), or 5:10 to 6:00pm in MS3153 (L0501). Practicals meet for two hours once per week in MP125. The exact locations and times for these practicals are posted on the course web-site under "Practicals" and "My PRA Group". NOTE: You must register for *both* the lecture *and* the practical parts of this course.

Required Text

"Essential University Physics" Volume 1 (3rd Edition) by Richard Wolfson, ©2016 by Pearson Education, Inc. Note that PHY132, starting in January, requires Volume 2 of this same text, so you should probably purchase both volumes. When bought new from the University of Toronto Bookstore or Discount Textbooks, this book comes with a free access code for MasteringPhysics. If you wish to buy MasteringPhysics separately, it costs $50.

Also Required

- An **i-clicker remote**, also available at the U of T Bookstore. i-clicker+, i-clicker 2, or regular i-clicker all work. If you can obtain a working used i-clicker from a friend not in this course, or craigslist or kijiji, this will also work.
- A non-communicating **calculator**, with no infrared or wireless communication capability. Programmable graphing calculators are allowed, but not necessary. At the minimum it should have SIN, COS, TAN on it and be able to do scientific notation.

Marking Scheme

Scheme 1:

Final Exam	45%
Two Midterm Tests	30%
Practicals	15%
Online MasteringPhysics Problem Sets	5%
Online MasteringPhysics Pre-class Quizzes	2%
Lecture Participation (i-clicker use)	2%
Pre/post-course Diagnostic Quizzes	1%
Bonus for Over 65% Course Evaluation Response Rate	1%

Scheme 2:

Final Exam	50%
Two Midterm Tests	35%
Practicals	15%
Online MasteringPhysics Problem Sets	0%
Online MasteringPhysics Pre-class Quizzes	0%
Lecture Participation (i-clicker use)	0%
Pre/post-course Diagnostic Quizzes	0%
Bonus for Over 65% Course Evaluation Response Rate	1%

At the end of the semester, your mark will be computed using both schemes, and the mark you receive will be the **higher** of the two. Note that the maximum possible mark is 101% above, but in the end every student will be held to a maximum of 100%.

Class Reading Schedule

Date	**Item**	**Sections** from Essential University Physics 3e by Wolfson
Mon Sep. 14	Class 1	Introduction and Welcome (no reading assignment)
Wed Sep. 16	Class 2	Ch.1
Mon Sep. 21	Class 3	Ch.2. **Problem Set 1** on Chs. 1, 2 due Sep.25
Wed Sep. 23	Class 4	Ch.3
Mon Sep. 28	Class 5	4.1-4.4. **Problem Set 2** on Ch.3 and 4.1-4.4 due Oct. 2
Wed Sep. 30	Class 6	4.5,4.6. **Problem Set 3** on Sections 4.5, 4.6 due Oct. 9
Mon Oct. 5	Class 7	Uncertainties (Supplemental Reading on portal)
Tue Oct. 6	**Midterm 6pm**	**Test covers Chs.1-4**
Wed Oct. 7	Class 8	5.1-5.3. **Problem Set 4** on Uncertainties and Sections 5.1-5.3 due Oct. 19
Mon Oct. 12	Thanksgiving	-
Wed Oct. 14	Class 9	5.4,5.5
Mon Oct. 19	Class 10	Ch.6. **Problem Set 5** on Sections 5.4,5.5 and Ch. 6 due Oct. 26
Wed Oct. 21	Class 11	7.1-7.3
Mon Oct. 26	Class 12	7.4-7.6. **Problem Set 6** on Ch. 7 due Nov. 2
Wed Oct. 28	Class 13	Ch.8
Mon Nov. 2	Class 14	9.1,9.2
Wed Nov. 4	Class 15	9.3-9.6. **Problem Set 7** on Chs. 8 and 9 due Nov. 10

Mon Nov. 9	Study Break	-
Wed Nov. 11	Class 16	10.1-10.3
Mon Nov. 16	Class 17	10.4,10.5
Tue Nov. 17	**Midterm 6pm**	**Test covers Uncertainties reading + Chs. 5-9, Secs.10.1-10.3**
Wed Nov. 18	Class 18	Ch.11. **Problem Set 8** on Chs. 10 and 11 due Nov.24
Mon Nov. 23	Class 19	Ch.12
Wed Nov. 25	Class 20	13.1,13.2. **Problem Set 9** on Ch.12, 13.1, 13.2 due Dec. 1
Mon Nov. 30	Class 21	13.3-13.7
Wed Dec. 2	Class 22	14.1-14.4. **Problem Set 10** on 13.3-13.7, 14.1-14.4 due Dec.8
Mon Dec. 7	Class 23	14.5-14.7
Wed Dec. 9	Class 24	Course Review, Preview of PHY132
Dec.17 9:00am	**2 hour Final Exam**	**Exam is comprehensive; All course material is covered.**

Practicals

In addition to classes, you will be meeting in Practicals for 2 hours once a week in room MP125A, MP125B, or MP125C. You will be working in an assigned team with up to three of your classmates. There will be two Teaching Assistant Instructors present for each Practical. The student-to-teacher ratio is, at most, 18:1. You do not need any special equipment or clothing for Practicals, just a calculator, something to write with, and enthusiasm!

Please try to select your PRA section on ROSI no later than September 17. After that date you must fill out a Practical Section Registration Online Form, available on the course web-site on portal. Only conflicts with other courses can normally be accepted as valid reason to change a Practical section after Sep.17.

A list posted on the first day near the door of the two Practical rooms will tell you which pod you have been assigned to. Your TAs will provide you with a seating assignment. Your Team of 3 or 4 students will keep a single lab notebook (provided by us), which is to be a complete record of everything you did, what you and your teammates thought it meant, and what conclusions you have drawn from your work. This notebook never leaves the room; all Practicals work must be completed within the weekly 2-hour Practical session. Each Practical session will include time for student questions and discussion.

For each Practical session two members of each Team will serve the following roles: (1) Facilitator: This person, a different individual each week, is responsible for keeping the Team on track with the Activities. When the entire Practical group discusses some topic, the Facilitator will be the Team's primary spokesperson. (2) Recorder: This person, also a different individual each week, takes primary responsibility for recording all work, speculations, conclusions, etc. in the lab notebook. The evaluation scheme for Practicals marks can be found in the Appendix, on the last page of this document.

Attendance in Practicals is mandatory for all students in PHY131. Any student late or absent for practicals will lose marks unless a valid, documentable excuse is provided. If you must miss a Practical session for a valid reason, such as illness, please obtain documentation (such as a Verification of Student Illness or Injury form) and provide it to April Seeley in MP129. There are no make-up Practicals sessions, but your mark will be adjusted so that excused absences will not count against your Practicals mark. It is your responsibility to check with your TA about material missed during the Practicals that you need to study for the tests and exam.

MasteringPhysics

Online homework, worth marks, will be offered on the MasteringPhysics web-site:
http://www.masteringphysics.com
To register for MasteringPhysics you need an access code, which comes for free when you purchase a new "Essential University Physics" Volume 1 (3rd Edition) by Richard Wolfson textbook at the U of T Bookstore or Discount Textbooks. Stand-alone accounts on MasteringPhysics are also available for $50 at the bookstore for students who have obtained used textbooks. To get started you will need the Course ID, which is:

Course ID: MPPHY131F15

You will also need to enter your University of Toronto Student Number (9 or 10 digits long), in order to receive your marks. To help you get started on MasteringPhysics, I have posted a 3-minute video which leads you through the steps at: https://youtu.be/CJ_ByY4Ykm4

Pre-class Quizzes
Classes in this course involve a lot of discussion and reflection, and they are much more effective if every student already has some familiarity with the chapters we will be discussing. In order to encourage reading ahead, before most classes beginning with class 2 on Sep. 16, you will have to complete a short MasteringPhysics quiz based on the reading for that day. There will also be an essay question for which you can type additional questions, thoughts or comments which I will read before class. The quiz is due by 8:00am before each class, so I actually suggest completing it the evening before the class. Each quiz contains only 5 questions or fewer, all of which should be quite easy if you have done the reading and/or watched the pre-class video on YouTube. There are 21 pre-class reading quizzes in the course, and your mark will be determined based on the best 20 of these. Pre-class quizzes which arrive late will receive a mark of zero.

Problem Sets
Problem Sets will be assigned weekly throughout the semester on MasteringPhysics, starting with the first problem set which is due Friday Sep.25 by 11:59pm. Students are encouraged to use all resources when thinking about the problems and formulating answers. Final answers to problem sets should be prepared and submitted by students individually. The late penalty for problem sets is 10% per day of lateness reduction in mark.

Lecture Participation (i-clicker use)

Every student should have their own i-clicker remote, available from the campus bookstore. We use these clickers to involve students in the class, survey the class, figure out what the majority of the class knows, and promote discussion.

To register your i-clicker remote, log on to the course web-site at https://portal.utoronto.ca, click on the link to register the remote, and enter the unique 8-character Remote ID which is found on a sticker on the back of your remote, or behind the battery.

For each lecture beginning with class 2, one participation point is awarded for clicking any answer (right or wrong) for half or more of the quizzes per lecture. The final Lecture Participation mark is based on the best 20 out of 23 scores, and is out of 20. Any student can miss or fail to participate in up to three classes without penalty. If more than three classes must be missed for a valid reason, please provide Jason Harlow or April Seeley with documentation, medical or otherwise, and we will excuse these absences. Note that it is against the rules to vote using a different student's clicker, or to ask another student to vote for you.

Pre/post-course Diagnostic Quizzes

Your first Practical session, scheduled in the first week of the semester, will be devoted to a Pre-course Diagnostic Quiz. This quiz should help us make our instruction more effective. A second, similar quiz will be given during the final Practical session to assess what you have learned over the semester. As an incentive for you to take these quizzes, we are making them worth 1% of your course mark. To earn this mark, all you have to do is to answer all questions on the quizzes, regardless of the correctness of your answers. We only ask that you avoid guessing; your answers should reflect what you personally think.

Bonus Point for Over 65% Course Evaluation Response Rate

The University of Toronto is committed to ensuring the quality of its academic programs, its teaching, and the learning experiences of its students. An essential component of our commitment to teaching excellence is the regular evaluation of courses by students. For a two week period at the end of the semester you will be allowed to follow a link that is sent to you by U of T and evaluate PHY131H1F. It will only take 10 or 15 minutes to answer the questions and enter your typed thoughts about the course. Your answers and thoughts are anonymous, but are very important to me. I promise you that when the results become available to me in January, I will read every comment and scrutinize the responses to see if it can help me improve the course or my teaching in the future.

The evaluation period for this semester will be: **Mon. November 23 – Thu. December 10, 2015**. During the evaluation period, I will monitor the response rate and advertise it during lectures. If, by the end of the course evaluation period, at least 65% of the students enrolled in this course complete the course evaluations, then every student in the course will have 1% added to their final course mark. If fewer than 65% of students complete the course evaluations, then no bonus point will be added for any student.

Midterm Tests and Final Exam

On Tuesday October 6 and Tuesday November 17, **Midterm Tests** (each 80 minutes long) will be held in the evening, from 6:10-7:30pm in rooms TBA. If you have a course-conflict you will be permitted to register to write the alternate sitting, which is the same day from 4:40-6:00pm. There is no third sitting, and no make-up test. If you have concerns about your test mark, please bring them promptly to the attention of Jason Harlow or April Seeley (phy131@physics.utoronto.ca).

In the event that you miss a midterm test for medical reasons, you must have the reasons documented by an approved medical practitioner on the official U of T Verification of Student Illness or Injury Form (http://www.illnessverification.utoronto.ca/) . If you do not, you will be assigned a grade of zero for the test. If you miss a test for valid and documented emergency such as illness, the weight of the test will be transferred to the other test, which will then count for 30% of your course mark.

A 2-hour **final examination**, administered by the Faculty of Arts & Science, will be held during the December examination period at a time announced by the Faculty and announced by late October. Detailed instructions will be posted on our Portal website a few weeks before the exam. If you miss the final exam, or if you have concerns about its marking, you must go to the Office of the Registrar of the Faculty of Arts & Science and follow their instructions.

During the term tests and final exam, you may bring one handwritten (not typed), original (not photocopied) 8½ × 11 sheet, on both sides of which you can write anything you wish. Only non-communicating calculators, with no infrared or wireless communication capability, can be used at midterm tests and at the final exam.

You will be writing the midterm tests and final exam in a room assigned based on your last name. Room information will be posted on the portal web-site. If you show up at a room to which you have not been assigned,

you may be turned away by the invigilators who will be checking people's names when they collect signatures; in any case, you may be held in breach of the Code of Student Conduct and risk a penalty.

Out of consideration for your fellow students, before you come in to lectures, tests or the exam, please remember to disable any device that can beep (watches!) or otherwise emit electronic sounds (cell phones!). While sitting at your seat during the test or exam, you will not be allowed to have on you any kind of phone, smartwatch, smartglasses, or any communication device whatsoever. These must be switched off completely and left in your bag at the side of the room, or in a clear plastic sealable bag under your desk.

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. Continuing to write after the end of a test or exam is a serious, sanctionable offence.

Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves. Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/policies/behaveac.htm). It is the rule book for academic behaviour at the U of T, and you are expected to know the rules.

i-clickers: The idea with discussion-based i-clicker questions in classes is that you think about a problem, discuss it with your friends, and then submit the best answer based on the discussion and your own thoughts. The marks assigned to in-class i-clicker questions are a way of monitoring class participation. If you are not in class, *you may not lend your clicker to a friend to get the marks for you!* If a student is caught in class using more than one clicker, both will be confiscated and both students associated with these clickers will incur a penalty.

Practicals: The work submitted for marks during Practicals must be completed during Practicals with the other members of your pod. Materials completed before Practicals may not be brought in and used to speed up the work in Practicals. Each pod-member should try to contribute, and encourage others to contribute to the work that ends up being submitted. All members of the same pod who are in attendance share the mark of the single submitted product. One of the purposes of Practicals is to teach you how to form effective teams, and work efficiently within a team of three or four peers.

MasteringPhysics: The point of MasteringPhysics work is to prepare yourself for the tests and exam. When you are stuck and find you cannot progress with something, it makes sense to seek out a friend in the class to see if they have any helpful hints. But the work you submit in the end should be *your own* work, and you should understand everything you submit and be prepared to explain why you submitted it.

Tests and Exam: Midterm tests and the final exam must be done individually, involving no communication at all with your peers. It is strongly advised not to engage in any behaviour that might be construed by the invigilators for the tests/exam as an attempt to obtain information from another candidate or from another test/exam paper.

The University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be investigated following the procedures outlined in the Code. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me. If you are experiencing personal challenges that are having an impact on your academic work, please speak to me or seek the advice of your college registrar.

Physics 131: Practical Evaluation

The practical mark will be out of 8 points: 2 of these points are individual marks based on effort and participation, and 6 of these points will be a pod/group score based on work in your practical notebook. The expectations for these points are defined below.

Pod Mark (6 points)

	Excellent (3)	Average (2)	Acceptable (1)	Unacceptable (0)
Results	All of the questions in the activity have been answered correctly	Most of the questions in the activity have been answered correctly but some have flaws or are incorrect	A few of the questions in the activity have been answered correctly	The majority of the questions in the activity have been answered incorrectly
Methods	Analysis/procedure is logical and well thought out, assumptions have been clearly stated, relevant concepts have been clearly explained, it is clear the pod understood the main point of the activity, measurements have been repeated for better accuracy, all steps have been justified, analysis includes a good discussion of error (if applicable)	Most of the criteria explained in the "excellent" section are satisfied, with the exception of one or two	A few of the criteria explained in the "excellent" section are satisfied	Very few of the criteria explained in the "excellent" section are satisfied

Individual Mark (2 points)

	Acceptable (2)		Unacceptable (0)
Effort	Student is a contributing member of the pod, student works proactively in a group, facilitator stops to ensure the entire group is keeping up with the group's progress, student respects other members of their pod and the TA, student has a positive attitude		Some aspect of acceptable behavior is not being met, which is holding the pod back

Total Mark for Student (8 points)