



# PHY132H1S - Summer Practicals Guide



Department of Physics

(emails on Physics Dept. web site)

University of Toronto

Congratulations! If you are in PHY132, then you must have passed PHY131, which is one of the most challenging and competitive first-year courses at University of Toronto, and, indeed, all of Canada. Well done! My goals in designing these Practicals are to use hands-on activities, team-work and a writing project to help you with the course material and to develop your laboratory skills, analysis techniques and communication skills. I hope you can have fun and achieve success!

Here are the names and contact information of some of the people who can help you in the Practicals this semester:



**Jason Harlow (me!),** Practicals Coordinator

Office: MP129-A, Phone 416-946-4071

Office hours: 3:00 to 4:00 PM, Tuesdays during lab weeks.

*“I am an astronomer, working in the Physics Department since 2004 as a Lecturer. I enjoy working with students and hope to choose and develop courseware and materials that enhance the student experience.”*

**April Seeley,** Course Administrator

Office: MP129, Phone 416-946-0531

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

Graduate Student Demonstrators for this semester:

**P5101 Thursday evenings, 7:10 to 10:00 PM. 5 groups working simultaneously in MP126:**

1A: Viacheslav Burenkov, 1B: Chris Charles, 1C: Chris Paul, 1D: Ryan Vilim, 1E: Aaron Sutton

**P5201 Thursday afternoons, 2:10 to 5:00 PM. 6 groups working simultaneously in MP126:**

2A: Gigi Wong, 2B: Sergei Dyda, 2C: Rockson Chang, 2D: Lei Huang, 2E: Shawn Stapleton, 2F: Andrei Swidinsky

## Schedule

DATE	LAB HOURS	LAB SESSION/ EXPERIMENT	LAB SECTION
Thu July 3	-	<b>NO LABS</b> (Individual Study: Error Analysis Assignment)	-
Thu July 10	3	Error Analysis Assignment Due! 1 – Oscillation of Hoop Pendulum I	P5201 (2-5p.m.) P5101 (7-10p.m.)
Thu July 17	2.5	2 – Oscillation of Hoop Pendulum II	P5201 (2-4:40p.m.) P5101 (7:30-10p.m.)
Thu July 24	3	3 – DC Circuits I	P5201 (2-5p.m.) P5101 (7-10p.m.)
Thu July 31	3	Measurement Project Due! 4 – DC Circuits II	P5201 (2-5p.m.) P5101 (7-10p.m.)

The practicals documents as well as your marks are available (or will be) at <http://portal.utoronto.ca> . Copies of these can also be found at

<http://www.physics.utoronto.ca/~jharlow/summerlab08.html> .

You will meet on Thursdays four times through the semester according to the schedule for 3 hours each.

To give you experience in team-building and working with your peers, you will be working in teams of 3 or 4. Your demonstrator and I will assign the teams, and reassign the teams after the first experiment is finished. While it can be fun to choose your own teams based on who you already know, I believe it is more valuable to your education and fairer in terms of grading if we assign the teams randomly twice in the semester.

Each team will share a single lab notebook, which will be given to you at the beginning of the first session. Your demonstrator will keep your notebook safe during the time between practical meetings. The notebook should have a name on the front, which will be your team name for the experiment you are beginning. Take some time to get to know other members of your team and their strengths. For each lab session, one of you should be elected as the **Note-taker** (in charge of making sure everything gets recorded in the notebook) and another as the **Facilitator** (in charge of making sure the team stays on task, and in charge of seeking help when the team is stalled). The roles of Note-taker and Facilitator should change person every lab session; all team members should have a chance to be both this semester.

A good lab book is a minute-by-minute record of your work in the lab. It should contain everything you do, all of your rough calculations or preliminary measurements, full details of any error calculations, any comments, records of success or failure, etc., should appear in its pages. There is no point in copying information that is already contained in the guide sheets. Nor is there any point in writing elegant descriptions or detailed essays on your procedure. Note form is sufficient, as long as it is complete and comprehensible to your demonstrator and fairly describes what you are doing as you do it. Please be neat! Notebooks are marked, in part, on the basis of completeness.

Please do not write in pencil since it is not permanent. You will see that the lab book has numbered pages and a title page so that it is possible to follow the logic and sequence of the recorded work, experiment-by-experiment. Enter the title of the experiments you do in the List of Experiments, along with starting and completion dates, and the names of the students who were present in each team. Every student should sign the notebook at the end of every session and write a brief (at least one sentence) note describing part of what was learned during the session.

### **The Error Analysis Assignment**

Available at <http://www.upscale.utoronto.ca/PVB/Harrison/ErrorAnalysis/index.html> . Please print out the 3 page Answer Form (available in PDF format as a link from the first page), and fill in the answers on this form. Put a staple through the 3-page assignment, and hand it to your demonstrator at the beginning of your first lab session July 10. Please be on time as you will be using what you learn from the Error Analysis Assignment in your experiments!

### **Measurement Project**

To give you practice performing your own measurements and analysis, and writing up your results in a more formal way, there is a Measurement Project this semester, due July 31. For it, I would like you to answer one of the following three general questions:

1. How tall is the Burton Tower of McLennan Physical Laboratories? , or,
2. How fast do cars drive on St. George St.? , or,
3. Do male U of T students have larger hands, on average, than female U of T students?

The typed report should be approximately 2 pages long. It should contain sections on Motivation, Procedure, Analysis and Conclusions. As part of your Motivation section, you should re-state the question so that it is more specific. Make sure that your final answer matches the question *you* are asking. If you would like to answer a question that is very different from any of the above three, please first obtain permission from your demonstrator or me.

Your Procedure section should include a description of measurements that you made. You may borrow metre sticks, stopwatches, measuring tape, Vernier callipers and the like from the Resource Centre in MP126. Your Analysis section may contain fits or graphs produced on the laboratory computers.

Please see details in the Appendix about the length limit, procedures for turning in to [www.turnitin.com](http://www.turnitin.com), late policies, etc. I hope you have fun on this project and get some results you can believe and convince people with. If you would rather submit a colour poster instead of a typed report, please see “Poster Option” in the Appendix.

## Appendix: The Rules and Regulations

**Responding to emails:** Professors and Administrators will endeavour to respond to your emails within 2 days. If you do not receive a reply within this period, please resubmit your questions and/or phone (leave a message if necessary). Please note that some email programs outside [utoronto.ca](http://utoronto.ca) (such as hotmail) can be unreliable in both sending and receiving messages through the U of T firewall.

**Procedures and Marking:** Mark breakdown:

Error Analysis Assignment (individual), due July 10	2%
Oscillations Module: Session 1 and 2, first team	5%
DC Circuits Module: Sessions 3 and 4, second team	5%
Measurement Project (individual), due July 31	4%
In-Lab Mark: individual assessment	4%

**Total** **20% of course mark.**

Each activity or main part of an experiment will be marked on a four point scale, with **no** fractional marks. The marks are:

0. This is only for missing or totally unacceptable work.
1. This is for work that is seriously deficient and unacceptable.
2. This is for work that requires improvement. Considerable feedback on what improvement would be needed will be required.
3. This is the “standard” mark and indicates good work.
4. This is for exceptional work. No more than 10 – 15% of the students will receive this mark on any activity.

You are required to attend all sessions and will be penalized for unauthorized absences. The penalty will be a zero on the Module work done in the session you did not attend. All work in the laboratory which is undertaken for credit must be done under the supervision of a lab demonstrator. Your Lab Notebook must stay with your demonstrator when you leave the lab.

### In Lab Mark

During each lab session throughout the course, your demonstrator will be observing how you, as an individual, perform in the lab on an ongoing basis. In arriving at this mark, your demonstrator will take into account your preparedness, the way you approach and organize your experimentation, your efficiency in planning and setting up the experiment, evidence of graceful handling of instruments and equipment, and your care in taking data. Also considered will be your ability to estimate errors (rather than calculating each one exactly), your ability to distinguish the essential from the inessential, the way you work with your team, your willingness to try something, to make a mistake, and to learn from it, and how often you seek advice and ask questions. In lab mark will be computed as a percentage out of 100, following the academic standards of U of T.

**The Error Analysis Assignment:** The 3-page assignment on the form provided is due to your demonstrator at the beginning of your first lab session July 10. The mark will be computed as a percentage out of 100, following the academic standards of the University of Toronto.

Late Error Analysis Assignments will be penalized at the rate of 10% per day of lateness. A fractional number of days will always be rounded *up* to the nearest integer, and the penalty will be applied as a percentage of the unpenalized mark.

Assignments more than 10 days late will receive a zero.

**Measurement Project:** A short, typed Measurement Project in electronic format is due to [www.turnitin.com](http://www.turnitin.com) by 11:59 PM on Thursday, July 31, 2008.

The final version of the Measurement Project should contain no more than 800 words (including table and figure captions), and should take up no more than 5 letter-sized page sides total (marks will be deducted if the report is longer than this!). Note that [turnitin.com](http://turnitin.com) sometimes overcounts the number of words; the [turnitin.com](http://turnitin.com) word count must not exceed 1000 words. It must be submitted in electronic format (Word, PDF and several other formats are acceptable) to [www.turnitin.com](http://www.turnitin.com) by the deadline, and an identical paper copy must also be submitted to your demonstrator at the beginning of your final lab session July 31. The paper copy may be turned in early if you wish, as can the electronic version. Your name, Student Number, Lab Group and Lab Demonstrator Name must appear clearly on the front of your Measurement Project.

**Poster Option:** The normal way to prepare a report is by using Microsoft Word with 12-pt font, into which you may insert figures, tables, etc. As an alternative, you may instead submit your Measurement Project as a poster. The

poster should be 28" tall and 36" wide, and should not have any text on it smaller than 24-pt. There are several good programs for making posters, including Powerpoint, Macromedia Freehand, Adobe Illustrator, Adobe Photoshop and Adobe PageMaker. In any case, you should make a PDF of your poster and attempt to submit it to turnitin.com following the instructions below. If turnitin.com does not accept the poster format, you may email your file directly to the lab coordinator Jason Harlow by the deadline. In either case you should submit an electronic version only. The very best posters submitted will be printed by the graphics department in Physics, and, with the author's permission, posted in the hall on the first floor of the North Wing of McLennan. Posters should include all the necessary information about your measurements and analysis, but should also be eye-catching, colourful and succinct.

Late Measurement Projects will be penalized at the rate of 10% per day of lateness. The number of days of lateness will be the maximum of the electronic submission lateness, as based on the turnitin.com time-stamp, and the paper-copy lateness. A fractional number of days will always be rounded *up* to the nearest integer, and the penalty will be applied as a percentage of the unpenalized mark. Measurement Projects with an electronic or paper lateness of more than 10 days will receive a zero.

The Measurement Project will, in part, be marked on writing style and on the organization and presentation of the material. Good English structure, spelling and grammar are expected, and graphs and diagrams should be clearly labelled.

Note that while your Procedure may include work you do with your friends, your Measurement Project should be primarily your individual work. You must perform the analysis and write the final version yourself. For information on "how not to plagiarize", please see <http://www.utoronto.ca/writing/plagsep.html>.

The turnitin.com version will be treated as your official submission, and the marker may download your report from the turnitin.com web site. The marker will also have access to an "originality report", which is a comparison of the text-portion of your report to millions of other documents, including all the manuals for this course, all the other reports submitted to turnitin.com, and many documents which were available at some time on the world-wide-web. The originality report will not be used in the marking unless there is some evidence that an unusually large amount of your unquoted text is identical to some other source. If you do wish to quote a source, be careful to reference it and include the copied words in quotation marks, so it is clear to the reader that you did not write them.

*Students agree that by taking this course your measurement project may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.*

To submit your assignment you should follow these steps:

1. **Set up a turnitin.com user profile (If you don't already have one.)**
  - Visit [www.turnitin.com](http://www.turnitin.com) and click *Create a user profile*.
  - Enter a valid utoronto.ca email address, password and your name. Please enter the same name that is on your University of Toronto I.D. so we can easily tell who you are.
2. **Log on to [www.turnitin.com](http://www.turnitin.com) .**
3. **Enroll in this class**
  - From your turnitin homepage click the *Enroll in a class* button.
  - For this class the *Turnitin class I.D.* is **2304046** and the *Turnitin enrollment password* is **sunshine** . The name of the class should be "PHY132 Summer".
4. **Submitting a paper.**
  - From your Turnitin homepage select this class
  - Click on the Submit button and select *File Upload* from the pulldown menu.
  - Enter a submission title for your paper, which should include your name. You may use spaces in the title, but not commas or other special characters. Use the *Browse* button to select the file that you would like to submit. Click *Submit*.
  - NOTE: Turnitin automatically will generate a text-only version of your paper. This is what it uses to search for textual similarity with other documents in its database. This text-only version will NOT be used in the marking; please ignore it. If we wish to mark your electronic version, we will download the exact same file you uploaded, which will be complete with figures, tables, special characters, fonts, etc.

If you prefer, you may choose to submit only a hard-copy of your project, but in this case you must also provide a photocopy of the relevant notes you took while performing your measurements with dates and times, with numbered references linking the text in your formal report to the original measurement notes. Please speak with the lab coordinator at least one week before the project deadline if you prefer to submit a hard-copy only.