

PHY 1100 – General Physics Lab 1 – Winter 2020

1 Credit hour

FULLY ONLINE LAB

Instructor: Michelle Greb mgreb@oakland.edu

Hours: Fridays, 1:30 – 3:30 pm or upon request

Supervisor: K. C. Castoldi castoldi@oakland.edu

Phone (home): 734-994-7114 (8:00 am – 8:00 pm, daily)

Hours: upon request – by phone or Zoom video conferencing

Course Management System: Moodle

Co-requisite: PHY 1010 online

Course Goals and Objectives:

The “Hands-on” Lab is intended for students registered for PHY 1010 online and it substitutes the in-class Laboratory experience.

This laboratory is aimed at introducing the students to the scientific method of investigation of physics phenomena and principles. It consists of an introduction to computer generated graphs, straight-line fits, error analysis, and a series of small-scale experiments on some of the main topics covered by the Physics course.

In this laboratory, the students will

- learn how to use basic physical measuring devices;
- become familiar with selected physics laws and phenomena;
- experience taking data and drawing conclusions from these;
- learn how to estimate and combine experimental errors

Lab Material: this lab is hands-on and requires the purchase of a kit

Kit Name: PHY1100W21KITARBORSCI

ISBN: 2818440085239

The Kit can be purchased at the Campus Bookstore for \$138

Notice: Some materials in this kit are different from the eScience Lab kit used in the past. Please do not purchase a used kit.

Hands-on Labs - Introduction:

This Hands-on Lab consists of small-scale experiments that can be performed at home or in a dorm room. The students will be able to perform most of the experiments by themselves, while a few of the experiments require the help of a friend or a relative.

These Labs have been adopted for nearly two decades by a growing number of Universities for online courses. Well over 100,000 students have used them.

The Kit contains the bulk of the equipment required for the labs. Please be aware that ***you will have to provide a few items*** that are usually found in a household.

Posted on Moodle you will find:

- *an introduction to Error Analysis*
- *the write-ups for each experiment*
- *the report files for each experiment*
- *additional notes for some of the experiments*
- *photos of the equipment required for each setup, and*
- *introductory videos for the more challenging experiments.*

Communication:

General questions on the Lab should be directed to Dr. Castoldi. This includes informing her promptly of any illness or other important, well documented reason for missing a deadline.

Questions on the experiments or request for assistance with the equipment should be directed to the Lab Instructor, Michelle Greb.

Communication among students is available on Moodle by means of a ***Chat Forum***. Students may freely exchange ideas, questions and advice through this forum, which will not be monitored by the instructor.

Reports:

You are required to submit the reports to the Lab Instructor, Michelle Greb, who will grade them. Please load your reports onto the Google Drive folder that will be created for the lab and shared with you by Michelle. The graded reports will be posted to the same folder. A help-document on how to use the Drive will be posted on Moodle.

The file name of the report should be, for example:

'PHY 1100 – Lab 1 – your Lastname'

The general rule is: ***No work is accepted after one week past the deadline.***
For each late day a 10% penalty will be applied.

If an illness or other serious circumstance prevented you from completing the work on time, please email Dr. Castoldi and an extension may be granted.

First Week:

During the first week, please

- Review the Lab Safety instructions on Moodle
- Take the **Lab Safety Quiz** on Moodle (deadline is January 10)

Second Week:

During the second week, please

- Review the **Error Analysis** file posted on Moodle and turn in the **Report**
- Review the **Graphing with Excel** instructions on Moodle

Following Weeks:

Each following week you will perform one experiment and turn in the **Report**.

- 1- Exercise 1: Hand Reaction Time
- 2- Exercise 2: Graphing and Motion
- 3- Measurements: Length, Mass, Volume, Density, and Time
- 4- Linear Acceleration
- 5- Friction
- 6- Hooke's Law
- 7- Levers
- 8- Centripetal Acceleration
- 9- Pendulum
- 10- Calorimetry
- 11- Sound Resonance

Last Week:

During the last week, please complete the **Lab Evaluation** posted on Moodle

Advice & Recommendations:

Required Time

Please be aware that some of these labs may turn out to be time consuming. To minimize confusion and help you surf more smoothly through the experiments, we took photos of the equipment required for each experiment, wrote introduction notes, and also recorded videos of the experiments.

It is recommended that you set aside at least two hours to setup and perform each experiment and allow an extra hour or more to complete the report. For comparison, the in-person lab sessions have the duration of 2 ½ hours and the report must then be completed at home.

Assistance

If you are still confused, or are unsure of what you are supposed to do, do not hesitate to email the lab instructor, Michelle Greb, at **mgreb@oakland.edu**

Purpose of this Lab

The purpose of each lab is to supplement your learning in the PHY 1010 lecture and give you a hands-on feel for some of the material you cover in the lecture portion of the course.

Try therefore not to just plug-in data in the equations, but to connect your data, calculations and analysis of the experiment back to the related course material as you complete the report.

Report Requirements:

For each experiment you will turn-in a Report with the data you collected, calculations you performed, any graphs you made, answers to the analysis questions, and a photo of your setup (possibly, a selfie with the equipment).

Lab *Write-ups* and the blank *Report files* are provided *on Moodle*.

Make sure that your Report meets the following guidelines:

- Data is recorded for **all** portions of the lab
- Units are recorded, unless already listed in the blank report
- All work is shown, including:
 - Sample calculations, when asked for
 - **All** work for analysis questions

To write equations you are requested to use the equation editor on Word

- Graphs, if required, should be embedded in the report, **not** sent as a separate file
- The report should be a **single PDF** file
- The file name of the report you load on Google Drive should be of the type:

“PHY 1100 – Lab 1 – Your Last Name”

A 5 points penalty will be applied to reports not meeting this requirement

Final grade:

Each Experiment is graded out of 100 points.

The Lab grade will be calculated based on the average of the 11 highest scores you received (Error Analysis plus 11 Labs).

This does not mean that you can skip any of the labs.

In order to pass this Lab, all the eleven experiments must be performed.

Grading scale:

A	96-100
A-	90-95
B+	85-89
B	80-84
B-	75-79
C+	70-74
C	65-69
C-	60-64
D+	55-59
D	50-54
F	< 50

Add/Drops

The University's add/drop policy will be explicitly followed. It is the student's responsibility to be aware of the university deadline dates for dropping courses.

Reasonable Accommodations

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. Students with disabilities who have questions about course accessibility are encouraged to contact the instructor immediately. The Office of Disability and Support Services (DSS) is available to help. The DSS office is located in room 103A North Foundation Hall.

For more information, call 248-370-3266 or visit <https://www.oakland.edu/dss>

Policy on Academic Misconduct

The University's regulations that relate to academic misconduct will be fully enforced. Any student suspected of cheating and/or plagiarism will be reported to the Dean of Students and, thereafter, to the Academic Conduct Committee for adjudication. Anyone found guilty of academic misconduct in this course may receive a course grade of F, in addition to any penalty assigned by the Academic Conduct Committee. Students found guilty of academic misconduct by the Academic Conduct Committee may face suspension or permanent dismissal. The full policy on academic misconduct can be found in the General Information section of the Undergraduate Catalog.

Excused Absence Policy

The University excused absence policy applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee.

For the excused absence policy, see:

<https://www.oakland.edu/provost/policies-and-procedures/>

Bereavement Policy

In the event of the death of certain members within families or among loved ones, the University grants necessary bereavement absences upon student request.

For the official bereavement policy, see:

<https://www.oakland.edu/provost/policies-and-procedures/>

Student Preferred Name/Pronoun Policy

The University recognizes that as a community many of its members use names other than their legal names to identify themselves. As long as the use of this different name is not for the purposes of misrepresentation or a legal name is required by University business, policy or legal need, the University acknowledges that a "preferred name" will be used wherever possible. The University reserves the right to not accept a preferred name if it is deemed inappropriate, including a preferred name that is vulgar, offensive, fanciful, or creates confusion with another person.

General Physics Lab 1 – Due Dates – Winter 2020

Due Date	Lab #	
Jan 10		<i>Lab Safety Quiz on Moodle</i>
Jan 17	0	Error Analysis
Jan 24	1	Exercise 1
Jan 31	2	Exercise 2
Feb 7	3	Measurements
Feb 14	4	Linear Acceleration
Feb 21	5	Friction
Mar 7	6	Hooke's Law
Mar 14	7	Levers
Mar 21	8	Centripetal Acceleration
Mar 28	9	Pendulum
Apr 4	10	Calorimetry
Apr 11	11	Sound Resonance
Apr 18		<i>Lab Evaluation</i>