Oakland University *College of Arts & Sciences* *Department of Physics*

General Physics Lab 1 – Fall 2018

Wednesdays, 5:30 – 7:57 pm

Location: HH 110 & 120 (Hannah Hall)

Instructors: Jasleen Kaur **Office:** 110 HH **Hours:** 5:30 – 6:00 pm
jasleenkaur@oakland.edu

Amanveer Singh **Office:** 110 HH **Hours:** 5:30 – 6:00 pm
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Supervisor: K. C. Castoldi **Office:** 162 HH **Hours:** by appointment
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Corequisite: PHY 1010 or PHY 1510

Course Goals and Objectives:

This laboratory for PHY 1010 and PHY 1510 students is aimed at introducing the students to the scientific method of investigation of physics phenomena and principles.

The laboratory experiences consist of an introduction to hand-drawn and computer generated graphs, straight-line fits, error analysis, and a series of experiments on many of the topics covered by the course.

In this laboratory, the students will

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

Summary of experiments:

- Exercise 1 Eye-hand reaction time; Intro. To Error Analysis
- Exercise 2 Extension of a rubber band; Graphing
- M-5 Uniform Acceleration
- M-6 Hooke's Law
- M-7 Conservation of Momentum
- M-4 Centripetal Force
- F-1 Archimedes' Principle
- H-1 Latent Heat of Nitrogen
- H-2 Thermal Expansion
- H-4 Calorimetry
- S-1 Speed of Sound
- S-3 Standing Waves in Strings

Lab Manual: Physics 1 Laboratory Manual – 4th Edition

Kendall-Hunt Publishing – ISBN: 9781524920500 [Required]

Available options for purchasing the manual:

- At the Campus bookstore – Barnes & Noble – Oakland Center for $34.60
- Online, directly from the publisher for $25.95 at:

  https://he.kendallhunt.com/product/general-physics-laboratory-i-experiments

Introduction: The laboratory meets weekly for 2 ½ hours and consist of two introductory exercises and ten experiments to be performed in groups of three students.

Please choose your partners for the term by the second meeting. Best practice would be to exchange e-mail addresses and phone numbers.

Purchase of a Lab Manual is required.

Attendance: Attendance to all laboratories is mandatory.

The general policy is: ***no make-up labs***.

In case of illness, or if unavoidable circumstances prevent you from attending the lab, please e-mail Dr. Castoldi as soon as possible. You may be able to make-up the lab during a different session. Documentation is required.

Grades for missed labs, reports and quizzes will be taken as zero.

Groups: At the end of the second week, the students will be divided into two groups: Group A and Group B. Make a note of the Group you belong to.
The Schedule at the end of this syllabus lists the lab sequence by group.

Equipment: Lab manual, scientific calculator, retractable pencil, pen, eraser, and a clear plastic metric ruler

Week 1: The first meeting is dedicated to Introduction, Lab Safety instructions, Error Analysis, and a short exercise on Measurements.
Students joining the course late will find on Moodle recorded Power Points on Lab Introduction and Error Analysis.

Lab Safety Quiz is on Moodle and is due by September 22.

Week 2: The second meeting is dedicated to familiarizing with significant figures and errors (Exercise #1) and graphing (Exercise #2).

Reports for these Exercises are due at the beginning of the next class meeting.

Week 3 on: The remaining meetings are dedicated to a number of laboratory experiences on topics related to Mechanics, Fluids, Thermodynamics, and Sound.
Power Point presentations for all the labs are available on Moodle.

Reports are due at the beginning of the next class meeting.

Quizzes: There will also be two Quizzes of the duration of 30 min each.
The quizzes will be at the beginning of the lab time. Please be punctual.

Please notice: it is mandatory that each student takes both Quizzes in order to pass the Lab.

Final grade:

Safety Quiz:	1%
Exercises 1 and 2:	9%
Experiments:	60%
Quizzes:	30%
Total	100%

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**

Common Courtesy Guidelines:

For your benefit and the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions.

- Show up for the lab on time.
- Turn off your cell phone and put away any iPod or other devices before entering the lab.
- Do not bring any food or drinks to the lab.
- Be attentive during the presentation and participate actively to the lab.
- If you must be late or leave early on a particular day, please inform your instructor well in advance. Documentation is required.
- Be kind and respectful to your fellow students and the instructor.

You may expect your grade to be lowered if you do not practice common courtesy.

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/

Student Preferred Name/Pronoun Policy

Course rosters are typically provided to the instructor with the student's legal names. If you do not identify with the name that is listed with the Registrar's office, please notify me. I will gladly honor your request to address you by an alternate name or gender pronoun. For more information on indicating a preferred first name on university records, please visit:
https://www.oakland.edu/uts/common-good-core-resources/name-services/

Notes on the Labs

- **Preparing for the Lab:**
  - Before you come to the lab, read carefully the description of the experiment in the lab manual and review the topic in your Physics textbook. This will allow you to better understand the experiment and to finish it within the laboratory period.
  - Reviewing the Power Point posted on Moodle before coming to the lab will also help you be better prepared.

- **During the Lab:**
  - Before you start the experiment, familiarize yourself with the apparatus and make a few trials before you start the actual data taking.
  - Perform the experiment following the instructions in the lab manual.
    The data must be written using a pen.
    The **hand-graphs** are better done **in pencil**, so you can make corrections.
  - Perform the data analysis in the lab. This will help you understand if the data you collected is reasonable. If you notice some discrepancy, you will still have time to take a new set of data.
  - If this is the case, strike through the old data with a pen, and write the new data above. **Do not use whiteout.** The reason for the revised data should be noted on the report.
  - Please handle the equipment carefully. Report promptly any damage to the instructor.
  - Before you leave the lab, the original **data pages must be initialed by the instructor**. Reports with non-initialed data pages will not be graded and will count as zero.

- **Reports:**
  - Each student must submit an **individual report**.
  - The report is due **at the beginning of the next class meeting**. Late reports will not be graded and will count as zero. The instructor is allowed one week to grade the report.
  - **Hand-in the report to the instructor** at the beginning of the next lab. If you have to turn in the report late, place it in the **black ballot boxes** outside the labs.
  - The reports will be graded based on your preparation, performance, quality and accuracy of the data, analysis, and conclusions.
  - The lab instructors will be available for office hours in the lab, or in Room 156 HH.
  - Sample calculations of derived quantities and errors should be included in the report. Significant figures should be used properly.
  - The graded reports will be **returned in the lab**.
  - Any **questions on the grading** should be directed to your lab instructor.
  - Lab grades will be posted on Moodle every two weeks.

The following are *academic misconduct,* leading to a grade of zero for the labs and a referral to the Academic Conduct Committee:

- **Identical lab analysis (data and graphs should be the same for all group members)**
- **Borrowed data or reports from previous years.**

General Physics Lab 1 Schedule – Fall 2018

Wednesdays, 5:30 – 7:57 pm

Date	Group A	Group B	Remark
Sep. 12	Introduction	Introduction	Introduction, Safety Information, Error Analysis, Measurements
Sep. 19	Ex. 1 & 2	Ex. 1 & 2	Exercise 1 & Exercise 2
Sep. 26	M-5	M-6	M-5 meets in Room 110, M-6 in 120
Oct. 3	M-6	M-5	M-5 meets in Room 110, M-6 in 120
Oct. 10	M-7	M-4	
Oct. 17	M-4	M-7	Quiz #1 (Ex. 1, Ex. 2, M-5, M-6)
Oct. 24	F-1	H-1	
Oct. 31	H-1	F-1	
Nov. 7	H-2	H-4	
Nov. 14	H-4	H-2	
Nov. 21	-	-	No Lab
Nov. 28	S-3	S-1	Quiz #2 (M-7, M-4 through H-2, H-4)
Dec. 5	S-1	S-3	Turn-in the report at the end of class

General Physics Lab 1 – Overall Schedule – Fall 2018

Monday **12:00 – 2:27 pm**	**Tuesday** **10:00 – 12:27 pm** **3:00 – 5:27 pm**	**Wednesday** **8:00 – 10:27 am** **12:00 – 2:27 pm** **5:30 – 7:57 pm**	**Thursday** **3:00 – 5:27 pm**	**Friday** **10:00 – 12:27 pm**
		9/5 No Lab	9/6 No Lab	9/7 No Lab
9/10 Introduction, Error Analysis	9/11 Introduction, Error Analysis	9/12 Introduction, Error Analysis	9/13 Introduction, Error Analysis	9/14 Introduction, Error Analysis
9/17 Exercises 1 & 2	9/18 Exercises 1 & 2	9/19 Exercises 1 & 2	9/20 Exercises 1 & 2	9/21 Exercises 1 & 2
9/24 M-5 & M-6	9/25 M-5 & M-6	9/26 M-5 & M-6	9/27 M-5 & M-6	9/28 M-5 & M-6
10/1 M-5 & M-6	10/2 M-5 & M-6	10/3 M-5 & M-6	10/4 M-5 & M-6	10/5 M-5 & M-6
10/8 M-7 & M-4	10/9 M-7 & M-4	10/10 M-7 & M-4	10/11 M-7 & M-4	10/12 M-7 & M-4
10/15 M-7 & M-4 Quiz 1	10/16 M-7 & M-4 Quiz 1	10/17 M-7 & M-4 Quiz 1	10/18 M-7 & M-4 Quiz 1	10/19 M-7 & M-4 Quiz 1
10/22 F-1 & H-1	10/23 F-1 & H-1	10/24 F-1 & H-1	10/25 F-1 & H-1	10/26 F-1 & H-1
10/29 F-1 & H-1	10/30 F-1 & H-1	10/31 F-1 & H-1	11/1 F-1 & H-1	11/2 F-1 & H-1
11/5 H-2 & H-4	11/6 H-2 & H-4	11/7 H-2 & H-4	11/8 H-2 & H-4	11/9 H-2 & H-4
11/12 H-2 & H-4	11/13 H-2 & H-4	11/14 H-2 & H-4	11/15 H-2 & H-4	11/16 H-2 & H-4
11/19 No Lab	11/20 No Lab	11/21 No Lab	11/22 No Lab	11/23 No Lab
11/26 S-3 & S-1 Quiz 2	11/27 S-3 & S-1 Quiz 2	11/28 S-3 & S-1 Quiz 2	11/29 S-3 & S-1 Quiz 2	11/30 S-3 & S-1 Quiz 2
12/3 S-3 & S-1	12/4 S-3 & S-1	12/5 S-3 & S-1	12/6 S-3 & S-1	12/7 S-3 & S-1