

**German Jordanian University**  
**Basic Sciences Department**  
**General Physics Lab [PHYS 106] | Second Semester 2023 - 2024**

**Instructors: Ms. Razan Marwan, Mr. Sulaiman Alkhalili.**

**Course Syllabus**

**Part 1: Course Information**

**Course Description**

This course will develop a good understanding of a few important basic concepts in Mechanics, Electricity, and Magnetism. This lab consists of eleven experiments, six in Mechanics and five in Electricity and Magnetism. The students will be provided with video links to watch the theory part before coming to the lab, since it is a blended course of three hours (2 hours in the lab and 1 hour asynchronous online via recorded videos). At the beginning of each experiment, a short discussion will be conducted for the theory part, the concepts, and any formulas of the main topic for the experiment. The lecture will also cover any expected problems in the lab report. All the experiments will be performed in groups. **Note: Each student has to hand in his/her own report.**

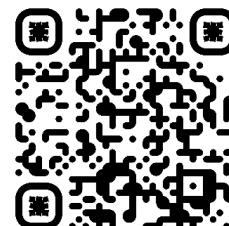
**Prerequisite**

Physics I [PHYS103].

**Textbook & Course Materials Required Text**

Lab Manual and report. (Scan QR Code)

- <https://www.gju.edu.jo/content/phys106-general-physics-lab-5068>



**Recommended Texts & Other Readings**

- Physics for Scientists and Engineers, Serway and Jewett, 9<sup>th</sup> edition.
- Practical physics, G. L. Squires, University of Cambridge, 4<sup>th</sup> edition.

**Part 2: Student Learning Outcomes**

During this course, and at the end of the semester, the student will be able to:

- Use various measuring devices and relate the measurements to the basic concepts in physics.
- Definition of devices and get used to it.
- Explain the ideas in the mechanics, electricity, and magnetism, a scientific explanation and interaction between theory and experiment.
- Describe the concepts of some physical quantities in mechanics, electricity, and magnetism.
- Identify the different types of the errors and calculate them.
- Execute experiments in the mechanics, electricity, and magnetism, such as linear motion with constant speed and constant acceleration, motion in two dimensions, linear momentum & collision, resistors, Kirchhoff's laws, capacitors, magnetic field, and transformer.
- Apply different procedures and techniques for each experiment.
- Differentiate the SI units for the physical quantities and comparing the empirical results with the theoretical values.
- Examine the experimental results and draw valid conclusions from them.
- Relate among the physical laws to get quantitative results.
- Examine the results and argue the conclusions.
- Develop abilities for using advanced learning resources and software applications.

**Part 3: Grading Policy**

Semester work	Laboratory Reports	35%	→ 60%
	Midterm Exam	15%	
	Readiness Evaluation	10%	
Final Exam		40%	
<b>Total</b>		<b>100%</b>	

## Part 4: Course Policies | Class Attendance

- Attendance in all lab sessions is **Obligatory**.
- If you must miss a lab due to illness or other excused reasons, you must talk with the lab instructor as soon as possible. Each lab section is full and there will be neither make-up sessions nor space for you to work in other sections. If you miss a lab, you **MUST** discuss the issue with the course instructor (preferably beforehand) to see what options you have.
- University attendance regulations state that you may miss no more than **two lab Sessions** for any reason or risk of being permanently dismissed from the lab.

## Part 5: Topic Outline | Schedule

Week	Exp.	Exp. Name	Date
1 <sup>st</sup>	---	<b>Semester Overview</b>	25.Feb - 29.Feb
2 <sup>nd</sup>	1	Uncertainty and Errors Analysis. <ul style="list-style-type: none"> <li>• Part A: Basics of experimental errors.</li> <li>• Part B: Measurements and calculation of errors.</li> </ul>	03.Mar - 07.Mar
3 <sup>rd</sup>	2	Motion in one dimension. <ul style="list-style-type: none"> <li>• Part A: Position and velocity.</li> <li>• Part B: Linear motion with constant velocity Vs constant acceleration.</li> </ul>	10.Mar - 14.Mar
4 <sup>th</sup>	3	Motion with constant acceleration. <ul style="list-style-type: none"> <li>• Part A: Inclined plane (<math>g \sin\theta</math>).</li> <li>• Part B: Free falling bodies.</li> </ul>	17.Mar - 21.Mar
5 <sup>th</sup>	4	Motion in two dimensions: Projectile motion.	24.Mar - 28.Mar
6 <sup>th</sup>	5	Newton's Second law.	31.Mar - 04.Apr
7 <sup>th</sup>	---	<b>Free lab</b>	07.Apr - 11.Apr
8 <sup>th</sup>	---	<b>Midterm exam</b> (Depending on the exam schedule from the registration department)	14.Apr - 18.Apr
9 <sup>th</sup>	6	<ul style="list-style-type: none"> <li>• Part A: Friction.</li> <li>• Part B: Linear momentum &amp; collision.</li> </ul>	21.Apr - 25.Apr
10 <sup>th</sup>	7	Resistors and resistors connections.	28.Apr - 02.May
11 <sup>th</sup>	8	Kirchhoff's laws.	05.May - 09.May
12 <sup>th</sup>	9	Capacitors and capacitors connections.	12.May - 16.May
13 <sup>th</sup>	10 11	Magnetic field in a Current-Carrying coil. Transformer basics.	19.May - 23.May
14 <sup>th</sup>	---	<b>Free lab</b>	26.May - 30.May
15 <sup>th</sup>	---	<b>Final exam   Thu. 06. Jun.2024   14:00</b>	02.Jun - 06.Jun

## Part 6: Lab Preparation

Each student must be prepared for the experiment **BEFORE** coming to the lab in order to complete the experiment in the allotted time. Students must have all the needed stationeries for each lab (**pencil, rubber, calculator**, etc.).

## Part 7: Laboratory Rules

- You should arrive punctually.
- Eating and drinking in any laboratory is prohibited.
- Don't use your mobile during the laboratory.
- Before leaving the laboratory:
  1. Switch off the interface and computer.
  2. Ensure that the apparatus and your place has been left tidily.