



**Course Descriptor
PHYS181 Physics I Lab)**

Proposed Academic Year	2021-22	Last Reviewed Academic Year	2020-2021
Course Code	PHYS181	Course Title	Physics I Lab
Credit hours	1	Level of study	Undergraduate
College / Centre	CAHS	Department	DBS
Co-requisites	PHYS101	Pre-requisites	None

1. COURSE OUTLINE

[Physics is an experimental science. The theory that is presented in lectures has its origins and is validated by experimental measurement. Phys181 explores the practical aspect of Physics and the basic principles and concepts in Physics as taught in theory are applied in the laboratory. It is designed for students who will take their undergraduate degree programs in Engineering and Applied Sciences.

2. AIMS

[The aim of this module is to lay a firm foundation for students to apply the basic principles and concepts of Physics. The module will introduce students to on how to use Vernier calipers and Micrometer, Hooke's law apparatus and construction of simple DC circuits. It will also develop experimental techniques, in particular skills of data analysis, the understanding of experimental uncertainty, and the development of graphical visualization of data.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
Upon successful completion of this course, students will be able to:		
1. Demonstrate an understanding of scientific theory, measurement and units.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment
2. Measure accurately dimensions, velocity and acceleration	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment
3. Determine the connection between force and motion.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment
4. Differentiate among density, mass, volume and weight.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment Practical Examination



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5. Construct DC circuits and measure electrical properties.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment
6. Determine spring constant using Hooke's law principle.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment Quiz
7. Graphically represent and analyse experimental data.	Lecture and Demonstration Lab Work ,Group work	Lab work sheet, Pre lab assignment Written Examination

4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Midterm Examination	20%
Lab Report	20%
Quizzes	20%
Final Examination	40%
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve **3** credit hours for this course by passing **ALL** of the course assessments [*alternatively, list the compulsory pass assessments**] and achieving a **minimum overall score of 50%**

NB *Ensure that ALL learning outcomes are taken into account

6. COURSE CONTENT (Indicative)

Introduction to Lab Safety/Orientation	
Plotting of Straight Line Graphs	
Density of Rectangular and Cylindrical Object – Vernier Caliper	
Density of Rectangular and Cylindrical Object – Micrometer Caliper	
Linear air track- Measurement of velocity	
Force table- Equilibrium of Forces	
Midterm	
Measuring the Spring constant – Hooke's Law	
Verification of Ohm's law	
Resistance in series and parallel	
Simple pendulum- Determination of acceleration due to gravity	
Specific Heat Capacity of a Solid	
Quiz/Revision	
Final Examination	
TOTAL HOURS	45
Plus RECOMMENDED INDEPENDENT STUDY HOURS	15



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TOTAL COURSE HOURS

60

7. RECOMMENDED REFERENCES

Core text/s:

Walker James S (2016) Fifth edition Pearson international edition

Giancoli, Douglas C (2014) Physics: Principles with Application Seventh Edition Pearson Prentice Hall International edition

Library + online resources:

<http://www.physics.smu.edu/~scalise/apparatus/caliper/>

<http://www.technologystudent.com/equip1/microm1.htm>

http://physicscatalyst.com/elec/current_4.php

<http://hyperphysics.phy-astr.gsu.edu/hbase/electric/ohmlaw.html>

<http://moodle.asu.edu.om/course/view.php?id=8463>

Open Educational Resources:

<https://archive.org/stream/physics00paul#>

https://archive.org/stream/isbn_9780470379257#

https://openlibrary.org/works/OL2538490W/Fundamentals_of_physics