

# PHY1201: GENERAL PHYSICS I

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## Effective Term

Semester B 2023/24

## Part I Course Overview

### Course Title

General Physics I

### Subject Code

PHY - Physics

### Course Number

1201

### Academic Unit

Physics (PHY)

### College/School

College of Science (SI)

### Course Duration

One Semester

### Credit Units

3

### Level

B1, B2, B3, B4 - Bachelor's Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

HKDSE Mathematics Compulsory Part or equivalent

### Precursors

HKDSE Physics or Combined Science (Physics, Chemistry) or Combined Science (Biology, Physics) or AP1200/PHY1200 Foundation Physics

### Equivalent Courses

AP1201 General Physics I

### Exclusive Courses

Nil

## Part II Course Details

### Abstract

This course covers a wide scope of topics in physics including mechanics, heat and gases, wave and optics. Students will investigate the fundamentals of these topics and become able to apply them to solve real problems in science and engineering. This course equips students with a broad knowledge in several important topics in Physics and the depth and coverage are sufficient for the students to pursue a number of the science and engineering majors.

### Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Recognize and use appropriately important technical terms and definitions relevant to the major topics in the course.	x	x	
2	Use appropriate mathematical notation such as vector to formulate and apply the physical laws covered in the course in concise form.	x	x	
3	Apply physics laws of mechanics, heat and gases, as well as wave and optics in familiar situations.		x	x
4	Solve real and hypothetical problems by identifying the underlying physics and analyzing the problem.	x	x	x

#### A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

#### A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

#### A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lecture	explain key concepts and theory of topics of the course	1, 2, 3, 4	3
2	Tutorial	Explain how some problems are solved and the techniques used; explain some concepts	1, 2, 3, 4	1
3	Assignment	Practice solving problems	2, 3, 4	1

4	Laboratory	Set up the experiment, carry out some measurement and analyse the results with the relevant theory; students learn experimental skills, analysis methods and data presentation skills	3, 4	3 (students are only required to attend 1 lab session throughout the course)
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**Assessment Tasks / Activities (ATs)**

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignments	1, 2, 3, 4	27
2	Laboratory Report	1, 3, 4	3

**Continuous Assessment (%)**

30

**Examination (%)**

70

**Examination Duration (Hours)**

2

**Additional Information for ATs**

^ For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

**Assessment Rubrics (AR)****Assessment Task**

1. Assignments

**Criterion**

1. Capacity for using physics knowledge and theory to solve problems
2. Demonstrate correct understanding of key concepts.

**Excellent (A+, A, A-)**

High level

**Good (B+, B, B-)**

Significant level

**Fair (C+, C, C-)**

Moderate level

**Marginal (D)**

Basic level

**Failure (F)**

Not even reaching marginal levels

**Assessment Task**

2. Lab Report

**Criterion**

1. Demonstrate capacity of setting up the required experiments
2. Demonstrate capacity of carrying out proper measurement
3. Demonstrate correct understanding of the experimental results

**Excellent (A+, A, A-)**

High level

**Good (B+, B, B-)**

Significant level

**Fair (C+, C, C-)**

Moderate level

**Marginal (D)**

Basic level

**Failure (F)**

Not even reaching marginal levels

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**Assessment Task**

3. Examination

**Criterion**

1. Capacity for using physics knowledge and theory to solve problems
2. Demonstrate correct understanding of key concepts and physics theory.

**Excellent (A+, A, A-)**

High level

**Good (B+, B, B-)**

Significant level

**Fair (C+, C, C-)**

Moderate level

**Marginal (D)**

Basic level

**Failure (F)**

Not even reaching marginal levels

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## Part III Other Information

**Keyword Syllabus**

- Mechanics: Vectors and scalars. Resolving forces. Newton's laws of motion. Conservation of energy. Moments and torques. Gravitation. Circular motion.
- Heat and gases: Temperature and heat. Heat capacity. Latent heat. Thermal expansion. Gas laws. Kinetic theory of gases.

- Waves: Traveling waves. Standing waves. Huygens' construction. Interference, refraction and diffraction. Doppler effect.
- Optics: Reflection. Refraction. Lenses.

### Reading List

#### Compulsory Readings

Title	
1	Nil

#### Additional Readings

Title	
1	H Young, and R Freedman, "University Physics with Modern Physics" 13th Edition, Pearson (2012).