City University of Hong Kong
Course Syllabus

offered by Department of Physics
with effect from Semester A 2018/19

Part I Course Overview

Course Title:	**General Physics I**
Course Code:	**PHY1201**
Course Duration:	**One semester**
Credit Units:	**3**
Level:	**B1**
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
Medium of Instruction:	**English**
Medium of Assessment:	**English**
Prerequisites: *(Course Code and Title)*	**HKDSE Mathematics Compulsory Part or equivalent**
Precursors: *(Course Code and Title)*	**HKDSE Physics or** **Combined Science (Physics, Chemistry) or** **Combined Science (Biology, Physics) or** **AP1200/PHY1200 Foundation Physics**
Equivalent Courses: *(Course Code and Title)*	**AP1201 General Physics I**
Exclusive Courses: *(Course Code and Title)*	**Nil**

Part II Course Details

1. 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.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs[#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	Recognize and use appropriately important technical terms and definitions relevant to the major topics in the course.		√	√	
2.	Use appropriate mathematical notation such as vector to formulate and apply the physical laws covered in the course in concise form.		√	√	
3.	Apply physics laws of mechanics, heat and gases, as well as wave and optics in familiar situations.			√	√
4.	Solve real and hypothetical problems by identifying the underlying physics and analyzing the problem.		√	√	√
** If weighting is assigned to CILOs, they should add up to 100%.*		100%			

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4			
Lecture	Explain key concepts and theory of topics of the course	√	√	√	√			3
Tutorial	Explain how some problems are solved and the techniques used; explain some concepts	√	√	√	√			1
Assignment	Practice solving problems		√	√	√			1
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			√	√			6 hours of laboratory and report writing,

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting*	Remarks
	1	2	3	4				
Continuous Assessment: 30 %								
Assignments	√	√	√	√			25%	
Laboratory Reports	√		√	√			5%	
Examination^: 70% (duration: 2 hours)								
** The weightings should add up to 100%.*							100%	

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

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Assignments	1. Capacity for using physics knowledge and theory to solve problems 2. Demonstrate correct understanding of key concepts.	High level	Significant level	Moderate level	Basic level	Not even reaching marginal levels
2. Lab Reports	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	High level	Significant level	Moderate level	Basic level	Not even reaching marginal levels
3. Examination	1. Capacity for using physics knowledge and theory to solve problems 2. Demonstrate correct understanding of key concepts and physics theory.	High level	Significant level	Moderate level	Basic level	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. 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.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

Nil

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

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