

PHYS 1111 General Physics I

Course Outline (Fall 2024)

1. Instructor

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2. Teaching Assistants

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3. Meeting Dates, Times, and Venues

Lectures

L1	Wed & Fri	01:30PM – 02:50PM	LT-C
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Tutorials

T1	Mon	06:00PM - 06:50PM	Rm. 2406
T2	Thu	09:30AM - 10:20AM	Rm. 2504
T3	Thu	04:30PM - 05:20PM	Rm. 4579

4. Course Description

PHYS1111 targets students who have learned the most basic knowledge in physics in high school. Students with more advanced physics background should consider taking PHYS 1312. PHYS 1111 employs an algebra-based approach. Students with knowledge of calculus should take PHYS 1112 instead. Key topics include motions and Newton's laws, work and energy, conservation of energy and momentum, rotation, rigid body, simple harmonic and damped oscillations, forced oscillations, standing waves and sound waves, kinetic theory and the laws of thermodynamics.

Credit points: 3

Pre-requisite: Level 3 or above in HKDSE $\frac{1}{2}\times$ OR HKDSE $1\times$ Physics

Exclusion: Level 3 or above in HKDSE Mathematics Extended Module M1/M2, PHYS 1101, PHYS 1112, PHYS 1312

5. Intended Learning Outcomes

Upon successful completion of this course, students should be able to...

Nos.	ILOs
1	represent a physics problem pictorially and graphically by sketching its physical parameters (force, potential, momentum, PV diagram, etc.) in drawings or graphs and establish physical insight through the drawings;
2	translate the physical description of the problem to mathematical equations necessary to solve it, establish physical insight through mathematical equations, solve the equations with appropriate mathematical skills and explain the physical meaning of the mathematical equations and solution of the problem;
3	justify problem solutions, by examining the symmetry of the solution, taking account of limits, conservation laws, assessing units, dimensional analysis, and/or the scale or order of magnitude of the answer;
4	justify and explain the selected approach to problems and solutions clearly, both orally and in writing;
5	pose sophisticated, specific questions about physical phenomena and classes of problem, articulate any difficulty experienced in a problem and take action to overcome that difficulty to achieve an appropriate solution.

6. Assessment Scheme

Assessment	Assessing Course ILOs
25% by assignments	1-5
25% by midterm exam	1-5
50% by final exam	1-5

7. Student Learning Resources

- Adopted textbook:
College Physics
Author: Hugh Young
Edition: 10th (Global)
Publisher: Pearson
Format(s): Print book+MasteringPhysics, eBook+MasteringPhysics
- Lecture notes (including simulations and videos)
- Live experimental demonstrations during lectures
- Course homepage: <https://canvas.ust.hk/courses/59554>

8. Teaching and Learning Activities

Scheduled activities: 4 hours [2×1.5 hours (lectures) + 1×1 hour (tutorial)] / week

9. Course Schedule

Keyword syllabus:

Lecture Nos.	Book Chapters and Contents
1	Chapter 2 Motion along a Straight Line
2	Chapter 3 Motion in a Plane
3	Chapter 4 Newton's Law of Motion
4	Chapter 5 Applications of Newton's Laws
5	Chapter 6 Circular Motion and Gravitation
6	Chapter 6 Circular Motion and Gravitation (Cont'd)
7	Chapter 7 Work and Energy
8	Chapter 7 Work and Energy (Cont'd)
9	Chapter 8 Momentum
10	Chapter 8 Momentum (Cont'd)
11	Chapter 9 Rotational Motion
12	Chapter 9 Rotational Motion (Cont'd)
13	Chapter 10 Dynamics of Rotational Motion
14	Chapter 10 Dynamics of Rotational Motion (Cont'd)
15	Chapter 11 Elasticity and Periodic Motion
16	Chapter 11 Elasticity and Periodic Motion (Cont'd)
17	Chapter 12 Mechanical Waves and Sound
18	Chapter 12 Mechanical Waves and Sound (Cont'd)
19	Chapter 14 Temperature and Heat
20	Chapter 14 Temperature and Heat (Cont'd)
21	Chapter 15 Thermal Properties of Matter
22	Chapter 15 Thermal Properties of Matter (Cont'd)
23	Chapter 16 The Second Law of Thermodynamics
24	Chapter 16 The Second Law of Thermodynamics (Cont'd)