香港中文大學(深圳)
The Chinese University of Hong Kong, Shenzhen

PHY1001: Mechanics

1 Course Overview

1.1 Lecturer

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1.2 Course Assessment

1. In-class Quiz: 10%
2. Homework : 20%. (130 — 140 Problems in total)
3. Midterm exam: 30%
4. Final exam: 40%

1.3 Textbooks

Main textbook A physical book is highly recommended.
Sears & Zemansky's University Physics, by Young and Freedman.

Halliday, R. Resnick, and J. Walker, "Principles of Physics", John Wiley & Sons, 10th edition.

These are very popular textbooks in the US for college students. The following reference book may be useful for students who are hungry to learn more about the physics and math details.

Reference book
Berkeley Physics Course: Mechanics, by Charles Kittel.

1.4 Course description

In total, we have 28 lectures with the last lecture as the review session.

1. Chapter 1-3: Measurement; Motion Along straight line; Vectors
2. Chapter 4 Motion in 2 and 3 Dimensions
3. Chapter 5 Force and Motion-I
4. Chapter 6 Force and Motion-II
5. Chapter 7 Kinetic Energy and Work
6. Chapter 8 Potential Energy, Energy Conservation
7. Chapter 9 Center of Mass and Linear Momentum-I
8. Chapter 9 Center of Mass and Linear Momentum-II
9. Chapter 10 Rotation-I
10. Chapter 10 Rotation-II
11. Chapter 10 Rotation-III
12. Chapter 11 Rolling, Torque, Angular Momentum-I
13. Chapter 11 Rolling, Torque, Angular Momentum-II
14. Chapter 11 Rolling, Torque, Angular Momentum-III
15. Chapter 12 Equilibrium and Elasticity-I
16. Chapter 12 and 13 Equilibrium and Elasticity-II; Gravitation-I
17. Chapter 13 Gravitation-II
18. Chapter 13 Gravitation-III
19. Chapter 14 Fluids
20. Chapter 15 Oscillations-I
21. Chapter 15 Oscillations-II
22. Chapter 16 Oscillations-III
23. Chapter 16 Transverse Waves-I
24. Chapter 16 Transverse Waves-II
25. Chapter 17 Transverse Waves-III & Longitudinal Waves-I
26. Chapter 17 Longitudinal Waves-II
27. Chapter 17 Longitudinal Waves-III
28. Review

1.5 Course Plan (28 Lectures)

1. First 7 weeks: First ten chapters
   + midterm exam.
2. Second 7 weeks: Chapter 11-17
   + final exam.

Weekly plan:

(a) lectures: 3 hour per week;

(b) Exercise class (TA tutorial): 1 hour per week;

(c) Office hour: 1 hour per week. Time to be assigned.

1.6 Tips and Expectation

1. Before lecture, briefly read the textbook and get familiar with the physics glossary and terminology; During lecture, take notes and ask questions whenever possible; After lecture, finish the homework problems with a fresh memory.
2. Seeking help when needed (e.g., office hour, etc); offer feedback to help me improve; Participate the discussion as much as you can.
3. Collaborative learning is useful and important. There is a clear line between collaboration and plagiarism. Copying someone's homework is not acceptable. In the meantime, lecturers and TAs are always willing to offer help. You are also encouraged to discuss with your classmates.