General Physics I - Syllabus

Spring semester 2024

Course information

Code	Title	Credit	Coordinator
PHYS151	General Physics I	3	Office of General Physcis (*KPOP&* Collaboration)

Major Competency based Course Objective: By understanding basic physics course involving classical mechanics, rotation, wave, and thermodynamics, develop **creative problem-solving** skills and **convergent thinking** skills.

Students recommended to take the course: All students.

Prerequisites: None.

Textbook: Halliday, Resnick, and Walker, *Principles of Physics, 10th or 11th Edition* (John Wiley & Sons, Inc)

Reference: ***KPOP&* Physics X** and ***KPOP&* Physics XCheckpoints**

Course Policies (Optional by professors)

- Courses are taught online or offline.
- Online (Blackboard) quizzes are held 5 times during the semester. **Quiz questions only come from the problems in XCheckpoints.**
- The specific exam schedule will be announced during the semester. Evaluation : [100 points per exam] $\times$ [2 exams] + [online quiz 100 points] + α = [300 points total] + α.

The number of absences	Penalties
$3 \sim 5$	one-step downgrade
$6 \sim 9$	two-step downgrade
10 or more	F

Tentative Course Outline

Week	Dates	Contents	Comments
W1	03/04 $\sim$ 03/08	**01. Measurement**	

W2	03/11 ∼ 03/15	**02. Motion Along a Straight Line** **03. Vectors**	
W3	03/18 ∼ 03/22	**04. Motion in Two and Three Dimensions** **05. Force and Motion - I**	
W4	03/25 ∼ 03/29	**06. Force and Motion - II**	
W5	04/01 ∼ 04/05	**07. Kinetic Energy and Work**	
W6	04/08 ∼ 04/12	**08. Potential Energy and Conservation of Energy**	04/10: Election
W7	04/15 ∼ 04/19	**09. Center of Mass and Linear Momentum** **14. Fluids**	
W8	04/22 ∼ 04/26	**Mid-Term Exam Period**	.
W9	04/29 ∼ 05/03	**10. Rotation** **11. Rolling, Torque, and Angular Momentum**	
W10	05/06 ∼ 05/10	**12. Equilibrium and Elasticity** **13. Gravitation**	05/06: Children's day (substitute holiday)
W11	05/13 ∼ 05/17	**15. Oscillations** **16. Waves - I**	05/15: Buddha's Birthday
W12	05/20 ∼ 05/24	**17. Waves - II**	
W13	05/27 ∼ 05/31	**18. Temperature, Heat, and the First Law of Thermodynamics**	DEA-DONG JAE Week
W14	06/03 ∼ 06/07	**19. The Kinetic Theory of Gases**	06/06: Memorial Day
W15	06/10 ∼ 06/14	**20. Entropy and the Second Law of Thermodynamics**	
W16	06/17 ∼ 06/21	**Final Exam Period**	

***KPOP&E* Physics XCheckpoints** 

X1C.	**Introduction and Physical Dimensions**
X2C.	**One-Dimensional Motion**
X3C.	**Cartesian Components of a Euclidean Vector**
X4C.	**Rotation and Cross Product**
X5C.	**Motion in 3D**
X6C.	**Newton's Laws of Motion**
X7C.	**Miscellaneous Forces**
X8C.	**Work-Kinetic-Energy Theorem**
X9C.	**Conservative Force**
X10C.	**Computation of Potential Energy**
X11C.	**Center of Mass and Shell Theorem**
X12C.	**Liner-Momentum Conservation**
X13C.	**Angular Momentum**
X14C.	**Rigid-Body Dynamics**
X15C.	**Statics and Elasticity**
X16C.	**Fluid Statics**
X17C.	**Fluid Dynamics**
X18C.	**Simple and Damped Harmonic Oscillations**
X19C.	**Driven Damped Harmonic Oscillation**
X20C.	**Newton's Law of Universal Gravitation**
X21C.	**What is a Wave?**
X22C.	**Properties of Waves**
X23C.	**Temperature and Heat**
X24C.	**The First Law of Thermodynamics**
X25C.	**Kinetic Theory of Ideal Gas**
X26C.	**Maxwell-Boltzmann Distribution and Specific Heats**
X27C.	**Entropy**
X28C.	**The Second Law of Thermodynamics**