TROY UNIVERSITY
COURSE: PHYSICAL SCIENCE AND LAB
AT HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
(HUST)

(October 2025 – January 2026)

I. GENERAL INFORMATION

- Course code: SCI/L 223
- Course Title: Physical Science and Lab
- Term: Fall 2025
- Location: HUST, D8– 208
- Semester Hours: 04 credits
- Class hours: Wednesday, 2.00 PM–4:45 PM
- Lecturer: Thoan Nguyen-Hoang, Assco. Prof. Dr.
  Faculty of Engineering Physics
  Hanoi University of Science and Technology
  Email: thoan.nguyenhoang@hust.edu.vn

II. COURSE DESCRIPTION

- Basic Physical Science for non-majors, including topics in mechanics, thermal physics, electricity and magnetism, waves, and quantum physics, astronomy and cosmology.
- Laboratory experiments in basic Physical Science for non-science majors.

III. TEXTBOOK

- P.G. Hewitt, J. Suchocki, and L.A. Hewitt, *Conceptual Physical Science*, 6th Edition (2017), Pearson, ISBN 10: 0-13-406049-0 or ISBN 13: 978-0-13-406049-1.

IV. COURSE OBJECTIVES

- Understand the scientific method as is applies to concepts in physics.
- Appreciate the evolving nature and the tentative nature of models and theories in physics.
- Use critical thinking and problem-solving strategies in the application of basic concepts of physics.
- Understand how to collect and interpret scientific data and apply the scientific method in hands on experiments in the physical sciences.

V. REQUIREMENTS

For a student to complete the course, he/she needs to:

- attend at least 80% the class hours, 100% lab hours.
- submit all assignments, where at least 80% are in time, and
- take the midterm and final exams.

VI. EVALUATIONS

- Attendance & participation: 15%
- Assignment and homework: 20%
- Midterm exam: 20%
- Lab. Report 10%
- Final exam: 35%

VII. GRADING SYSTEM

- Grade A: 90% – 100%
- Grade B: 80% – 89%
- Grade C: 70% – 79%
- Grade D: 60% – 69%
- Grade F: 59% or lower

VIII. COURSE OUTLINE OF TOPICS

1. Physics

1.1 Physical Quantities and Measurement Techniques
1.2 Patterns of Motion and Equilibrium
1.3 Newton's Laws of Motion
1.4 Momentum and Energy
1.5 Gravity, Projectiles, and Satellites
1.6 Fluid Mechanics
1.7 Thermal Energy and Thermodynamics
1.8 Heat Transfer and Change of Phase
1.9 Static and Current Electricity
1.10 Magnetism and Electromagnetic Induction
1.11 Waves and Sound
1.12 Light

2. Astronomy

2.1 The Solar System

2.2 Stars and Galaxies

2.3 The Structure of Space and Time

IX. LABORATORY EXPERIMENTS

(Labs will be selected by the instructor during the course, within the following labs.)

Lab 1. Density of a metal

Lab 2. Free fall

Lab 3. Conservation of momentum

Lab 4. Simple pendulum

Lab 5. Speed of sound in the air

Lab 6. Standing waves on strings

Lab 7. Thermal expansion

X. Rules and Comments

- ✓ Absolutely no food or drinks are allowed in the classrooms or laboratories.
- ✓ All exams are closed book and closed notes unless stated otherwise.
- ✓ Final exam is comprehensive. Failing to take the final exam will result in a grade of "F."
- ✓ No make-up labs, Quizzes, Homework, or exams are permitted unless prior arrangement with the instructor has been made.
- ✓ You are responsible for any information and/or assignments given during class, whether you are present or not.
- ✓ You are expected to be in class on time, and to remain in class for the entire period unless permission to leave early has been granted by the instructor. It is disruptive to arrive or depart while class is in session.
- ✓ **More than 3 unexcused lecture absences could result in a grade of "F" for the course.**
- ✓ Cellular phones must be turned off or put on silent mode during class. No surfing the net, checking e-mail, or chat room is permitted during the class/lab periods.