

# PHYSICS DEPARTMENT

## COURSE OUTLINE

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### **PHYS 105 General College Physics 2**

Physics 105 continues the survey of General College Physics topics, including properties of vibrations, wave motion and sound, geometric optics, hydrostatic fluids, and the properties of electric and magnetic fields. Together, Physics 104 and Physics 105 satisfy laboratory science requirements for students in non-science programs.

OFFERED:	Winter, Spring
CREDIT:	4
IN-CLASS WORKLOAD:	4 lecture, 2 lab (semester)
PRE-/CO-REQUISITES:	PHYS 104 or departmental assessment

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#### REQUIRED MATERIALS:

Textbook: Physics, Principles with Applications, 6<sup>th</sup> or 5<sup>th</sup> edition,  
Douglas C. Giancoli

Physics 104/105 lab manual

Scientific calculator (any calculator is acceptable with the exception of personal computers)

Graph paper (must be either 10 lines/inch or millimeter graph paper)

#### DEPARTMENT POLICIES REGARDING TESTING:

1. Students must write quizzes, tests, midterm tests, etc., on the date and time assigned by the instructor. Instructors are not required to provide make-up tests. At their discretion, instructors may waive a test or provide a make-up test only in the event of documented illness or other extenuating circumstances.
2. Midterm tests may be dropped if: (a) a first-class mark is obtained on the comprehensive final exam, and (b) all term work has been completed and is judged to be satisfactory. In this case, the final grade for the course may be based on a combination of the final exam and the lab mark.

## DEPARTMENT POLICIES REGARDING LABS:

1. All assigned laboratory exercises and reports must be completed with an overall grade of 60% in order to obtain credit for this course. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances.
2. A student who is repeating a Physics course does not have to complete the laboratory exercises a second time if an average lab grade of 70% or better was obtained.

## STUDY TIME

It is recommended that between 5 and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.

## GRADING

The standard mark distribution for this course is as follows:

Final Exam	50%
Midterms and other work	40%
<u>Lab Reports</u>	<u>10%</u>
	100%

This distribution may be amended by the instructor (see your Instructor's Information sheet).

## GRADE SCALE

Final letter grades are normally assigned as follows (subject to above conditions):

Percentage	Letter Grade
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 59	D
below 50	F

## OUTLINE:

### **1. Waves and Sound (Chapter 11 and 12)**

- 1.1. Simple Harmonic Motion
- 1.2. Types of Waves
- 1.3. Reflection, Interference, and Standing Waves
- 1.4. Characteristics of Sound, the Human Ear
- 1.5. Vibrating Air Columns and Strings
- 1.6. Beats and the Doppler Effect

### **2. Geometric Optics (Chapter 23 and 25)**

- 2.1. Reflection in Plane and Spherical Mirrors
- 2.2. Refraction
- 2.3. Thin Lenses, Ray Tracing
- 2.4. Lenses in Combination and the Lensmaker's Equation
- 2.5. Human Eye,
- 2.6. Optical Instruments: magnifier, microscope, telescope

### **3. Fluids (Chapter 10)**

- 3.1. Review of Density and Pressure
- 3.2. Pascal's principle
- 3.3. Buoyancy and Archimedes' principle
- 3.4. Equation of Continuity
- 3.5. Bernoulli's Equation and Applications

### **4. Electric Fields (Chapter 16)**

- 4.1. Properties of Electric Charge
- 4.2. Coulomb's Law
- 4.3. Vector Nature of Electric Forces (in two dimensions)
- 4.4. The Electric Field
- 4.5. Electric Force on Charges

### **5. Magnetic Fields (Chapter 20)**

- 5.1. Properties of Magnets
- 5.2. The Magnetic Field
- 5.3. Magnetic Forces on Moving Charges
- 5.4. Magnetic Forces on Current-carrying Wires
- 5.5. Magnetic Forces between Wires
- 5.6. Torque on Current Loops
- 5.7. Applications (Hall Effect, Mass Spectrometer)