

## 2309 PHYS100 Course Outline

Subject Code : PHYS100  
Subject Title : Physics  
Level : 2  
Credit : 3  
Teaching Activity : Lecture (3 hours/class x 15 classes = 45 hours)  
Prerequisite : MATH101/102 Calculus I/II  
Class Schedule :

Class	Time		Classroom	Date
D1	TUE	15:30-18:20	C507	2023/9/4-2023/12/17
D2	MON	15:30-18:20	C507	2023/9/4-2023/12/17
D3	THU	09:00-11:50	C507	2023/9/4-2023/12/17
D4	FRI	09:00-11:50	C507	2023/9/4-2023/12/17
D5	THU	12:30-15:20	C507	2023/9/4-2023/12/17

Instructor : Dr. Junxiang Yang (D1)  
Dr. Zilu Zhou (D2, D3, D4)  
Dr. Xiaojun Xu (D5)  
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Office Room : A306b (Dr. Yang), C207 (Dr. Zhou), A504 (Dr. Xu)  
Office Hours : TBA (to be informed at the beginning of the first class)

### Course Description

It is the primary purpose of the relevant course to provide the students with fundamental knowledge in classical physics (#), in particular, to introduce many basic topics of classical mechanics and electromagnetism. The knowledge learned through the course is a foundation of subsequent courses of science and technology in several majors.

(# Some of the topics of classical physics, such as analytical mechanics, thermodynamics, statistical mechanics, and relativity, are supposed to be omitted in this course. See also the schedule shown below.)

### Textbook

Title : Principles of Physics

Author : David Halliday, Robert Resnick, Jearl Walker  
Edition : 11th  
ISBN : 978-1-119-45401-4  
Publisher : John Wiley & Sons, Inc.  
Date : December 2019

### **Intended Learning Outcomes**

Upon successful completion of the course, the students will be able:

- (1) to understand several principles seen in mechanical phenomena, such as translational motion of a point mass, rotational motion of a rigid body, and vibrational motion of an oscillator, together with the effects of force and torque on these motions;
- (2) to understand also electromagnetic principles, such as an electrostatic field, an electric current, a magnetic field, and electromagnetic induction;
- (3) to grasp a comprehensive understanding of the relations between the aforementioned principles and actual phenomena, for the application of the knowledge in order to explain and resolve real-life problems on the basis of the above principles; and
- (4) to appreciate the importance of several physical principles as employed in various branches of science and technology.

### **Schedule**

<b>Item</b>	<b>Topic</b>	<b>Hours</b>	<b>Teaching Method</b>
1	Measurement; Motion along a Straight Line	3	Lecture
2	Vectors; Motion in Two and Three Dimensions	3	Lecture
3	Force and Motion I; Force and Motion II	3	Lecture
4	Kinetic Energy and Work; Potential Energy and Conservation of Energy	3	Lecture
5	Center of Mass and Linear Momentum; Rotation	3	Lecture
6	Rolling, Torque, and Angular Momentum;	3	Lecture

	Equilibrium and Elasticity		
7	Gravitation; Fluids	3	Lecture
8	Oscillations; Waves I; Waves II	3	Lecture
9	Temperature, Heat. and the First Law of Thermodynamics; Entropy and the Second Law of Thermodynamics	3	Lecture
10	Coulomb's Law; Electric Fields; Gauss' Law	3	Lecture
11	Electric Potential; Capacitance	3	Lecture
12	Current and Resistance; Circuits	3	Lecture
13	Magnetic Fields; Magnetic Fields Due to Currents	3	Lecture
14	Induction and Inductance; Electromagnetic Oscillations and Alternating Current	3	Lecture
15	Maxwell's Equations; Magnetism of Matter; Electromagnetic Waves	3	Lecture
16	Final Examination	TDB	NA

### Assessment Approach

Assessment Method (tmp)	Percentage (tmp)
Class Participation	30%
Homework	20%
Final Examination	50%
Total	100%

### Guideline for Letter Grade

Mark	Grade	GPA
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93-100	A+	4.0
89-92	A	4.0
85-88	A–	3.7
80-84	B+	3.3
75-79	B	3.0
70-74	B–	2.7
65-69	C+	2.3
60-64	C	2.0
56-59	C–	1.7
53-55	D+	1.3
50-52	D	1.0
<50	F	NA

### Note

1. Classwork aims at checking the progress of the students throughout the classes and increasing their participation during the classes. The classwork also helps the instructor to observe the efficiency of their learning.
2. Homework includes some of the end-of-chapter problems selected from the textbook in general. The problems in the homework are used to reinforce and assess the concepts and skills acquired by the students and to let themselves know the level of their own understanding.
3. Examination serves as a major component of the evaluation in the subject. The examination is composed of about 5 to 8 problems. The problems are solved by applying the knowledge and methodology covered in the course. The emphasis of the assessment is put on testing the understanding, analysis, and problem-solving ability of the students.