

## **BA113- Physics (1)**

### **CREDIT HOURS**

3 Hours

### **CONTACT HOURS (Hours/week)**

Lecture: 2; Tutorial: 2; Lab: 2

### **TEXT BOOK**

Hans C. Ohanian and John T. Markert, Physics for engineers and scientists, W.W. Norton & Co.; latest edition.

### **COURSE DESCRIPTION**

This course consists of four parts static electricity, electric current, magnetism and light.

### **PREREQUISITE:**

None

### **RELATION OF COURSE TO PROGRAM**

Required

### **COURSE INSTRUCTION OUTCOMES**

The student will be able to gain good knowledge about the nature and the existence of static electricity, the interaction between different type of charges and the electric field types generated by these charges, distinguish between the static electricity and the electric current through the application of ohm's law and basic information about the structure of simple electric circuit. Also, the theory of magnetism and electromagnetic Induction.

### **TOPICS COVERED**

- Introduction to static electricity and Coulomb's law.
- Electric field.
- Electric potential.
- Capacitors.
- Electric current, ohm's law resistors in series and parallel.
- Kirchhoff's rule.
- Introduction to theory of magnetism and different applications.
- Electromagnetic induction.
- Optics and waves (nature of light, properties of light waves).
- Young's double slit 'polarization of light waves.

**CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:**

<b>Professional component Content</b>			
<b>Math and Basic Sciences</b>	<b>Engineering Topics</b>	<b>General Education</b>	<b>Other</b>
✓			

**RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:**

<b>Student Outcomes</b>		<b>Course aspects</b>
A	An ability to apply knowledge of mathematics, science, and engineering	a <sub>1</sub> a <sub>2</sub>
B	An ability to design and conduct experiments, analyze and interpret data.	b <sub>1</sub> b <sub>2</sub> b <sub>3</sub> b <sub>4</sub>
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	
D	An ability to function on multi-disciplinary teams.	d <sub>1</sub> d <sub>2</sub> d <sub>3</sub> d <sub>4</sub>
E	An ability to identify, formulate, and solve engineering problems	
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	g <sub>1</sub> g <sub>2</sub> g <sub>3</sub>
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	