

## **BA114- Physics (2)**

### **CREDIT HOURS**

3 Hours

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

Lecture: 2; Tutorial: 2; Lab: 2

### **COURSE COORDINATOR**

Dr Hany Kaldas

### **TEXT BOOK:**

T. D. Eastop and A. Mcconkey, *Applied Thermodynamics for Engineering Technologists*, Prentice Hall, latest edition .

### **COURSE DESCRIPTION:**

This course is concerned with the investigation of the behavior of the fluid under different conditions to calculate the net work done on or by the system.. It is also concerned with standing the first and second law of thermodynamics. Heat, work and internal energy of the fluids (liquid and gas) should be calculated for different processes under different condition. Heat transfer is also studied through this course.

### **PREREQUISITE:**

BA113

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

Required

### **COURSE INSTRUCTION OUTCOMES:**

The student gains knowledge on the relation between heat, work and the conservation of energy through thermodynamic cycle. The student gains knowledge also on different units.

### **TOPICS COVERED:**

Introduction to thermodynamics - Reversibility and reversible work - First law of thermodynamics' Non-flow equation - Steady flow equation - Working Fluid (steam, perfect gas) - Reversible processes.(constant volume, constant pressure, constant temperature, adiabatic) - Reversible process ( polytropic) - Second law of thermodynamics - Heat transfer.

**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>Engineering Design</b>
✓			

**RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:**

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