

Faculty of Engineering & Technology

Physics 1

Information :

Course Code : PHY 131

Level : Undergraduate

Course Hours : 4.00- Hours

Department : Faculty of Engineering & Technology

Instructor Information :

Title	Name	Office hours
Professor	Ossama Mohamed Salaheldin Hassan Nasser	
Lecturer	Ahmed Mohamed Ali Ashour	
Lecturer	Mohamed Ehab Ahmed Fakhr Eldin Bakr	7
Lecturer	Ahmed Mohamed Ali Ashour	
Assistant Lecturer	MOHAMED ZOHDY ABDELHAMID ZAHRAN	4
Teaching Assistant	Dina Hassan Hanafy Hassan	8
Teaching Assistant	Mohamed Essam Abd El Aziz Abd El Aal	8
Teaching Assistant	Nada El Said Abdallah Hassan Salem	10
Teaching Assistant	Romisaa Gamal Mahmoud Abdelrhman	2
Teaching Assistant	Mahmoud Ahmed Nasr Kamal Abdo Mostafa	6
Teaching Assistant	Lamia Hamdy Ahmed Kamal Shehab Eldin	6
Teaching Assistant	Ahmed Shawky Youssef Mohamed El Dkak	
Teaching Assistant	Ahmed Abd El Fattah Abd El Aziz Abd El Fattah	
Teaching Assistant	Lamia Hamdy Ahmed Kamal Shehab Eldin	6
Teaching Assistant	Mahmoud Ahmed Nasr Kamal Abdo Mostafa	6
Teaching Assistant	Romisaa Gamal Mahmoud Abdelrhman	2
Teaching Assistant	Dina Hassan Hanafy Hassan	8
Teaching Assistant	Mohamed Essam Abd El Aziz Abd El Aal	8
Teaching Assistant	Ahmed Abd El Fattah Abd El Aziz Abd El Fattah	

Area Of Study :

Overall aims of the course are:

- Enrich students' knowledge about physical concepts of properties of matter, heat and thermodynamics.
- Train student about properties of matter, heat and thermodynamics application related to electrical engineering.

Description :

1) Properties of matter:

Units in the SI system and conversion of units-Dimensions –Dimension analysis-Elastic Properties of Matter- Stress-Strain-Young 's Modulus Shear Modulus- Properties of Fluids – Pressure inside a fluid- Bulk Modulus- Buoyant Force - Hydrodynamics- Continuity equation for a laminar flow- Bernoulli's equation- Pilot tube- Venturi meter- Torricelli's law- viscosity – Poiseuille 's law- Viscous drag and Stoke's law.

2) Heat and thermodynamics:

Zeroth Law of thermodynamics - Quality of heat – First law of thermodynamics - Heat transfer mechanisms - Entropy and the second law of thermodynamics –some one way processes – Reversible and irreversible processes –Carnot cycle and Carnot engine - The absolute temperature scale – Principles of heat engines and refrigeration.

Course outcomes :

a.Knowledge and Understanding: :

1 -	List units in the SI system of units for the physical parameters used in this course and use dimensions and dimension analysis to find their physical laws.
2 -	Describe the stress, strain and different elastic moduli for elastic matter.
3 -	Define pressure inside fluid, identify buoyancy forces for floating and emerged solid object in fluids.
4 -	Describe the continuity and Bernoulli s' equations for a laminar flow (Pilot tube Venturi meter – Torricelli's law).
5 -	Recognize the zeroth, first and second law of thermodynamics.
6 -	Recognize the reversible and irreversible processes Carnot cycle and Carnot engine.
7 -	Describe the governing laws of thermodynamics

b.Intellectual Skills: :

1 -	Think critically and analyze physical problems
2 -	Evaluate non measurable physical quantities that are not directly measurable.
3 -	Predict the action outcome of different bodies and systems.
4 -	Predict the appropriate volumes, areas, or contours that simplifies problems.

c.Professional and Practical Skills: :

1 -	Apply Physical laws experimentally.
2 -	Measure the different physical parameters and perform experiments related to the properties of matter, thermodynamics and heat.

d.General and Transferable Skills: :

1 -	Work effectively in a team.
2 -	Communicate effectively.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Units and Dimensions	10	6	4
Elastic properties of Matter	10	6	4
Hydrostatics and Buoyancy Force	7	3	4
Hydrodynamics	7	3	4

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Viscosity	7	3	4
Zeroth Law of Thermodynamics	7	3	4
First Law of Thermodynamics	7	3	4
Heat transfer Mechanics	11	3	8
Entropy and 2nd Law of thermodynamics	7	3	4
Heat processes	7	3	4
Reversible, Irreversible process	7	3	4
Carnot Cycle and Engine	7	3	4
Principles of heat engines and refrigeration	7	3	4

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem solving
Experimental learning
Cooperative learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final exam	40.00		
Lab	20.00		
Mid-Term Exam 1	15.00		
Mid-Term Exam 2	15.00		

Books :

Book	Author	Publisher
Physics for Scientists and Engineers with Modern Physics	Raymond A. Serway & John W. Jewett	Brooks Cole

Course Notes :

handout and notes

Recommended books :

a) "College physics", Giambattista and Richardson, Mac gramtill, 3rd edition, 2010.
b) "Physics for scientists and engineers", Serway, Thomson Brookes/Cok., 8th edition, 2011.

