

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	2
Professor	Ossama Mohamed Salaheldin Hassan Nasser	2
Lecturer	Mohamed Ehab Ahmed Fakhr Eldin Bakr	14
Assistant Lecturer	Mohamed Essam Abd El Aziz Abd El Aal	8
Assistant Lecturer	Lamia Hamdy Ahmed Kamal Shehab Eldin	6
Assistant Lecturer	Mahmoud Ahmed Nasr Kamal Abdo Mostafa	14
Assistant Lecturer	Nada El Said Abdallah Hassan Salem	28
Assistant Lecturer	Mohamed Essam Abd El Aziz Abd El Aal	8
Assistant Lecturer	Nada El Said Abdallah Hassan Salem	28
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOU DA	22
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOU DA	22
Teaching Assistant	Omar Salah Abdelmoniem Ghareeb	4
Teaching Assistant	Ahmed Abdelfattah Abdelaziz Abdelfattah	
Teaching Assistant	Romisaa Gamal Mahmoud Abdelrhman	13
Teaching Assistant	Mariam Mohamed Kamal Abdelaziz	
Teaching Assistant	Ahmed Shawky Youssef Mohamed El Dkak	3
Teaching Assistant	Omar Salah Abdelmoniem Ghareeb	4
Teaching Assistant	Romisaa Gamal Mahmoud Abdelrhman	13
Teaching Assistant	Osama Mohamed Abdelrahman Ahmed Zaid	
Teaching Assistant	Ahmed Shawky Youssef Mohamed El Dkak	3

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		

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.