FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Physics 3

Information :

Course Code :	PHY 231	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Structural Engineering & Construction Management

Instructor Information :

Title	Name	Office hours
Lecturer	MOHAMED EHAB AHMED FAKHERELDIN BAKR	12
Assistant Lecturer	Ahmed Abdelfattah Abdelaziz Abdelfattah	

Area Of Study :

By the end of the course the students will be able to:

ÅEnrich students' knowledge about Oscillations, waves, optics and Modern physics.
ÅEnrich studentsôknowledge about atomic structure and crystal systems.
ÅTrain students to apply studied topics on application related to Structural engineering.

Description :

Ideal oscillation: representation, Energy and applications. Damped and forced oscillation. Classification of waves, Mechanical transverse wave, Sound waves: types, Speed and Intensity, Doppler effect. Superposition of waves, Standing Waves in string, rods and membranes. Light nature, Reflection, Refraction, Huygen's Principle. Interference: Conditions, Young's double slit, Intensity distribution, phase change. Diffraction: single and double slit patterns, diffraction grating. Polarization. Max-Planck's principle, photoelectric effect, the wave properties of particles, the quantum particle, uncertainty Heisenberg's principle. Hydrogen atom: Bohr's model, solids classification and crystalline structure. X-ray: production, spectral analysis, application.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	a1- Explain the principals of ideal oscillation
2 -	a2- Define the main terms of mechanical transversewave
3 -	a3- List the main items of sound waves
4 -	a4- Describe the main concept of superposition of waves
5 -	a5- List the main items of light nature
6 -	a6- Define the main terms of Max-Planck's principle
7 -	a7- Describe the main concept of hydrogen atom: Bohr's model
b.Intellectual Skills: :	
1 -	b1- Analyze the system of ideal oscillation
2 -	b2- Calculate the values of mechanical transversewave
3 -	b3- Assess issues of sound waves

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4 -	b4- Solve problems regarding superposition of waves
c.Professional and Practical Skills: :	
1 -	c1- Proceed test steps of the sound waves
2 -	c2- Proceed test steps of the light nature
3 -	c3- Prepare technical reports for hydrogen atom: Bohr's model
d.General and Transferable Skills: :	
1 -	d1- Cooperate and communicate effectively

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Ideal oscillation: representation, Energy and applications. Damped and forced oscillation.	10	6	4
Classification of waves, Mechanical transverse wave	15	9	6
Sound waves: types, Speed and Intensity, Doppler effect	5	3	2
Superposition of waves, Standing Waves in string, rods and membranes	10	6	4
Light nature, Reflection, Refraction, Huygens' Principle	15	9	6
Max-Planck's principle	10	6	4
hydrogen atom: Bohr's model	5	3	2
Revision	5	3	2

Teaching And Learning Methodologies :

- Discussion
- Interactive Lecturing
- Problem solving
- Experimental learning
- Cooperative learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00	16	
Lab	20.00	1	
Mid-Term Exam 1	15.00	6	
Mid-Term Exam 2	15.00	11	
Participation and performance	10.00	1	

Course Notes :

handout and notes

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Recommended books :

1.ñCollege physicsò, Giambattista and Richardson, Mac gramttill, 3rd edition, 2010.
2.ñPhysics for scientists and engineersò, Serway, Thomson Brookes/Cok., 8th edition, 2011.
a) ñCollege physicsò, Giambattista and Richardson, Mac gramttill, 3rd edition, 2010.
b) ñPhysics for scientists and engineersò, Serway, Thomson Brookes/Cok., 8th edition, 2011.

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