نموذج رقم (12)

University: Helwan

Faculty: Science

Department: Physics

Course Specifications

1. Course basic information		
Course Code: 4131	Course Title: physics (2)	Academic year: 2010
Lecture: 3 Exercise: 1 Lab: - Total:4 hrs		التخصص: طبية

2. Aim of the course	1- Introducing the fundamentals of modern, solid state, optics and radiation physics. 2-understanding of modern physical phenomena in modern physical sciences and technology. 3- Students should be able to specialize within the various theoretical and experimental fields of Physics. 4- serving as an introduction to the various aspects of Physics.
3. Intended Learning Outcomes (ILOs) :	
a.Knowledge and Understanding	**a1.** Knowing terms like Duality of waves and particles, quantization of energy, Bohr model of the hydrogen atom, nuclear structure, nuclear binding, nuclear stability, nuclear reactions, accelerators and nuclear reactors. **a2. Studying** the solid state of matter, crystalline structures, Bravais lattices, Bragg's law, impurities and lattice defects, dislocation, interatomic forces and binding, thermal, magnetic and electrical properties of solids. **a3.** Understanding wave motion, superposition of waves, interference of light waves, Interferometry, Michelson interferometer, Multiple beam interference, Fabre-Pero interferometer, Diffraction of light, diffraction grating, polarization of light, Brewster angle, double refraction, polarimetry and optical active media. **a4.** Introduction to nuclear radiation, radioactivity, interaction of radiation with matter, radioactive series, fission and fusion reactions, radiation dosage, effects of radiation on human bodies, radiation therapy and radiation detection.

b. Intellectual Skills	**b1.** Be familiar with photo electric effect, x-ray production, Compton scattering, Bohr model of the hydrogen atom, Frank-Hertz experiment, nuclear stability and nuclear reactions. **b2.** Be familiar crystal structure, effects of defects on crystal properties, different types of bonds, magnetization, thermal and electrical conductivities. **b3.** Discuss the characteristics of polarized light and ways to produce polarization.
c. Professional Skills	**c1.** be able to classify phase change of materials.
d.General Skills	**d1.** collecting data and scientific materials from text books and searching for information. **d2.** writing short reports on some specified subjects
4.Course Contents	Circular and elliptical polarization, Interference, Huygen's principle, Diffraction, grating, Multiple beam interference, Fabre-Pero interferometer. Duality of waves and particles, quantization of energy, Bohr model of the hydrogen atom, nuclear structure, nuclear binding, nuclear stability, nuclear reactions, accelerators and nuclear reactors. crystalline structures, Bravais lattices, Bragg's law, impurities and lattice defects, dislocation, interatomic forces and binding, thermal, magnetic and electrical properties of solids. Introduction to nuclear radiation, radioactivity, interaction of radiation with matter, radioactive series, fission and fusion reactions, radiation dosage, effects of radiation on human bodies, radiation therapy and radiation detection.

5.Teaching and Learning Methods	5- أساليب التعليم والتعلم
6.Teaching and Learning Methods for disable	Not applied
7. Student Assessment:	
a.Assessment Methods	Solving problems to assess and Midterm Term

b. Assessment Schedule	Assessment 1	Midterm exam	Week 6.
	Assessment 2	Problem assignment -1.	Week 7.
	Assessment 3	Problem assignment -2	Week 8.
	Assessment 4	Problem assignment -3.	Week 9.
	Assessment 6	Final written exam	Week 14

c.Weighting of Assessment	Mid-term examination	20	%
	Final-term examination	70	%
	Oral examination	non	%
	Practical examination	non	%
	Semester work	10	%
	Other types of assessment	non	%
	Total	100.00	%

8. List of Books and References:

a. Notes	**Physics (2)**
b. Essential Books	Physics for Scientists and Engineers, fifth edition. By: Serway, Beichner.
c. References	Physics for Scientists and Engineers, fifth edition. By: Serway, Beichner.
d. Periodicals	**non**

Course Coordinator: Head of Department:

Prof. Dr. Amin Fahim Hassan

Amin F. Hassan

Prof. Dr. Rizk A. Rizk

Rizk A. Riz

نموذج رقم (11أ)

University: Helwan **Course Title: Heat and properties of matter**

Faculty: Engineering **Code:** 4131

Department: Physics.

Matrix of Course Aims and Intended Learning Outcomes

Aims / ILO's	Introducing the fundamentals of modern, solid state, optics and radiation physics.	Understanding of modern physical phenomena in modern physical sciences and technology.	Students should be able to specialize within the various theoretical and experimental fields of Physics	Serving as an introduction to the various aspects of Physics
a Knowledge and Understanding				
a1.	•		•	•
a2.	•			•
a3.		•	•	
a4.				•
b. Intellectual Skills				
b1.		•		•
b2.			•	•
b3.	•			
c. Professional Skills				
c1.		•	•	
d. General Skills				
d1.	•	•	•	•
d2.	•	•		•

Course Coordinator: **Head of Department**

Prof. Dr. Amin Fahim Hassan

Amin. F. Hassan

Prof. Dr. Rizk A. Rizk

Rizk. A. Rizk

نموذج رقم (11أ)

University: Helwan **Course Title: Heat and properties of matter**

Faculty: Engineering **Code:** 4131

Department: Physics.

Matrix of Course Contents and Intended Learning Outcomes

Course Content	Hours/week	a.Knowledge &Understanding						b.Intellectual Skills								c.Professional Skills			d.General Skills			
		a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	b6	b7	b8	c1	c2		d1	d2	d3	d4
Circular and elliptical polarization, Interference, Huygen's principle, Diffraction, grating, Multiple beam interference, Fabre-Pero interferometr	4	•																		•		
Duality of waves and particles, quantization of energy, Bohr model of the hydrogen atom.	4	•							•	•						•			•	•		
Nuclear structure, nuclear binding, nuclear stability, nuclear reactions, accelerators and nuclear reactors.	4	•	•					•								•			•	•		
Crystalline structures, Bravais lattices, Bragg's law, impurities and lattice defects, dislocation,	4	•		•				•								•			•	•		

interatomic forces and binding, thermal, magnetic and electrical properties of solids																					
Introduction to nuclear radiation, radioactivity, interaction of radiation with matter, radioactive series, fission and fusion reactions, radiation dosage .	4		•								•					•			•		
Effects of radiation on human bodies, radiation therapy and radiation detection.	4																			•	

Course Coordinator:
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نموذج رقم (11أ)

University: Helwan **Course Title: Heat and properties of matter**

Faculty: Engineering **Code:** 4131

Department: Physics.

Matrix of Teaching Activities and Intended Learning Outcomes

Teaching Methods	a. Knowledge &Understanding				b. Intellectual Skills					c. Professional Skills						d. General Skills			
	a1	a2	a3	a4	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	c6	d1	d2	d3	d4
Lectures	•	•	•	•	•	•	•			•						•			
Tutorial					•	•	•			•							•		
Quiz and Assignments	•	•	•	•	•	•	•									•			
Case Study						•										•	•		
Reports and oral discussion					•					•						•	•		

Course Coordinator:

Prof. Dr. Amin Fahim Hassan

Amin F. Hassan

Head of Department

Prof. Dr. Rizk A. Rizk

R.Z.K. A. R.Z.K

نموذج رقم (11أ)

University: Helwan **Course Title: Heat and properties of matter**

Faculty: Engineering **Code:** 4131

Department: Physics.

Matrix of Assessment Methods and Intended Learning Outcomes

Assessments Methods	a. Knowledge &Understanding				b. Intellectual Skills					c. Professional Skills						d. General Skills				
	a1	a2	a3	a4	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	c6	d1	d2	d3	d4	d5
Final term Exam	•	•	•	•	•	•	•			•										
Mid-term Exam	•	•	•	•		•				•										
Sheets					•	•	•			•										
Reports & Case study	•	•	•	•		•	•			•						•	•			
Weekly assignments					•	•	•			•										

Course Coordinator: **Head of Department**

Prof. Dr. Amin Fahim Hassan

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Prof. Dr. Rizk A. Rizk

Rizk. A. Rizk