



## Model No.12

### Course Specifications: Physics A

**University:** Benha University

**Faculty:** Faculty of Engineering at Shoubra

**Department offering the program:** All programs

**Department offering the course:** Engineering Mathematics and Physics

#### 1- Course Data

**Course Code:** EMP013

**Course Title:** Physics A

**Specialization:** All programs

**Study Year:** Prep. Year

**Teaching Hours:** Lecture: 4

Tutorial: 1

Practical: 2

Total: 7

#### 2- Course Aim

**For students undertaking this course, the aims are to:**

- Study laws of gravitation
- Study concepts of elasticity
- Study laws of fluid dynamics, viscosity and surface tension.
- Study waves in elastic media.
- Deal with electric field and to understand and deal with Coulomb law.
- Understand and deal with electric capacitors, Kirchhoff's law, Gauss law and electric potential.

#### 3- Intended Learning Outcomes of Course (ILO's)

- a. Knowledge and Understanding Skills:** On completing this course, students will be able to:
- a.1) Recognize concepts and theories of physics and sciences, appropriate to the different engineering specializations. (A.1)
  - a.2) Recognize methodologies of solving engineering problems, data collection interpretation. (A.5)
- b. Intellectual Skills:** At the end of this course, the students will be able to:
- b.1) Select appropriate physical and computer-based methods for modeling and analyzing problems. (B.1)
  - b.2) Select appropriate solutions for engineering problems based on analytical thinking. (B.2)
  - b.3) Solve engineering problems, often based on limited and possibly contradicting information. (B.7)
- c. Practical and Professional Skills:** On completing this course, the students are expected to be able to:
- c.1) Apply knowledge of physics, science, and information technology, design, and business context and engineering practice to solve engineering problems. (C.1)
  - c.2) Apply numerical modeling methods to engineering problems. (C.7)



- d. General and Transferable Skills:** At the end of this course, the students will be able to:
- d.1) Collaborate effectively within multidisciplinary team. (D.1)
- d.2) **Communicate effectively.(D.3)**

#### 4- Course Contents

Week no.	Topics
1	Rotation and gravitation
2	Fluid dynamics and Elasticity
3	Waves in an elastic media
4	Simple harmonic motion
5	Introduction to electric charges
6	Coulomb`s law
7	Electric field
9	Gauss`s law
10	Electric potential
11	Electric capacitors
12	Electric current and resistance
13	Power and electromotive force

#### 5- Teaching and Learning Methods

- 5.1 Lectures
- 5.2 Tutorial problem session
- 5.3 Assignments/homework
- 5.4 Practical training/laboratory.

#### 6- Teaching and Learning Methods of Disables

Nothing

#### 7- Student Assessment

##### a- Student Assessment Methods

1. Assignments to assess knowledge and intellectual skills.
2. Quiz to assess knowledge, intellectual and professional skills.
3. Midterm exam to assess knowledge, intellectual, professional and general skills.
4. Practical exam to assess practical, intellectual, professional and general skills.
5. Final exam to assess knowledge, intellectual, professional and general skills.

**b- Assessment Schedule**

NO.	Assessment	Week
1	Assignments	2, 12
2	Experimental write up	All
3	Midterm exam	8
4	Practical exam	14
5	Final exam	15

**c- Weighting of Assessments**

Assessment	Weight (%)
Midterm Examination	12
Final Term Examination	66
Oral Examination	00
Practical Examination	17
Semester Work	00
Other Types of Assessment	05
<b>Total</b>	<b>100</b>

**8- List of References****a- Course Notes**

- 1- Lectures material and experimental sheets prepared by instructor

**b- Books**

- Physics, David Halliday, Robert Resnick and Kenneth S. Krane, John Wiley & Sons, Inc.

**c- Recommended Books**

- Physics for Scientists and Engineers with modern physics by Serway.

**d-Web Sites**

- 1- [www.physicsresearch.com](http://www.physicsresearch.com) , [www.electrostaticResearch.com](http://www.electrostaticResearch.com) , [www.Google.com](http://www.Google.com)

**Course Coordinator:** Prof. Dr. FatmaMetawe, Assoc. Prof. Dr. Ahmed Abdallah&Assoc. Prof. Dr. Khalid Hassan EisawyElsaid

**Head of Department:** Prof. Dr. Said Adballah



**Model No.11A**  
**Course Specifications : Physics (2)**

**University:** Benha University

**Faculty:** Faculty of Engineering at Shoubra

**Department:** Mechanical Engineering Department

**Matrix of Knowledge and Skills of the Course**

no.	Topics	Week no.	Knowledge and Understanding Skills	Intellectual Skills	Practical and Professional Skills	General and Transferable Skills
1	Rotation and gravitation - Introduction to electric charges	1	a1		c1	d1
2	Rotation and gravitation - Coulomb`s law	2	a1		c1	d1
3	Rotation and gravitation - Electric field	3	a1, a2	b2, b3	c2	d2
4	Rotation and gravitation - Electric field	4	a1, a2	b2, b3	c2	d2
5	Rotation and gravitation - Gauss`s law	5	a1	b2		
6	Fluid dynamics and Elasticity - Gauss`s law	6	a1	b2		
7	Fluid dynamics and Elasticity - Electric potential	7	a1, a2	b1, b2		
8	Fluid dynamics and Elasticity - Electric potential	8	a1, a2	b1, b2, b3		
9	Mid-term exam	9	a1, a2	b1, b2		
10	Fluid dynamics and Elasticity - Electric capacitors	10	a1, a2	b1, b2		
11	Waves in an elastic media - Electric capacitors	11	a1, a2	b1, b2		
12	Waves in an elastic media - Electric current and resistance	12	a1	b2	c2	
13	Waves in an elastic media - Power and electromotive force	13	a1	b2	c2	
14	Simple harmonic motion - Kirchhoff`s law	14	a1		c1	d1
15	Final exam	15	a1, a2	b2, b3	c2	d2

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**Matrix of Course Aims and ILO's****Course Title: Physics (A)****Course Code:EMP013****Teaching Hours:** Lecture: 4                      Tutorial: 1                      Practical: 2                      Total: 7**Major or minor element of program: N.A.****Program on which the course is given:** B.Sc. Mechanical Power Engineering**Department offering the program:** Mechanical Engineering Department**Department offering the course:** Engineering Mathematics and Physics Department**Academic year / level:** 2014-2015 Preparatory Year / First Semester**Date of specifications approval:** 16/3/2010

No.	Topics	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
2.1	Study laws of gravitation.		b2,b3		
2.2	Study concepts of elasticity.	a1			
2.3	Study laws of fluid dynamics, viscosity and surface tension.	a1,a2	b2,		
2.4	Study waves in elastic media.	a1, a2	b3	c2	d1
2.5	Deal with electric field and to understand and deal with Coulomb law.	a1	b2	c1	
2.6	Understand and deal with electric capacitors, Kirchhoff's law, Gauss law and electric potential.	a1	b2		d2

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