

**University Benha**

**Faculty Science**

**Course Specifications**

Programme(s) on which the course is given: **Biology & Geology**

**Major or Minor element of programs:** major

**Department offering the program:** Biology & Geology

**Department offering the course:** Physics

**Academic year/level:** 1<sup>st</sup> year /2<sup>nd</sup> semester

**Date of specification approval:** 2007

**A- Basic Information**

**Title:** Electromagnetic and Optics

**Code:** Phy103

**Credit Hours:**

**Lecture:** 2hrs/week

**Tutorial:** 0 hr/week

**Practical:** 2 hrs/week

**Total:** 4 hrs/week

**B- Professional Information**

1. **Overall Aims of Course:** By finishing of this course the graduate will be able to understand the natural of light, the absorption, the scattering of light, the quantum optics and laser and the optical measurements. Also, understand the concepts of electricity and magnetic effects.

2. **Intended Learning Outcomes of Course (ILOs)**

**a- Knowledge and Understanding:**

To make the graduate able to:

- a1- Understand the natural of light.
- a2- Understand the absorption and scattering of light.
- a3- Understand the optical measurements.
- a4- Know the electric fields and electric potentials

**b- Intellectual Skills**

To make the graduate able to:

- b1- Differentiate between the natural materials and the light
- b2- Analyze the different light phenomena.
- b3- Work in a circuit analysis and networks.
- b4- Collect, summarize and analyze the practical data.

**c- Professional and Practical Skills**

To make the graduate able to:

- c1 - Analyze the properties of the natural light.
- c2- Use the apparatuses which depend on the light.
- c3- Create communication circuits and logic circuits.

#### **d- General and Transferable Skills**

- d1- Use Computer
- d2- Work in groups.
- d3- Analyze results.

### **3. Contents**

<b>Topics</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Practical</b>
Natural of light	4	2	2
Absorption and scattering	4	2	2
Optical measurement's	12	4	8
Coloumb's law and Gauss theorem for fields calculations	6	6	-
Electric potential	2	2	-
Capacitances	10	4	6
Magnetic field and motion of charges	8	2	6
Applications	2	2	-
Total	48	24	24

### **4. Teaching and Learning Methods**

- 4.1- Lectures
- 4.2-Practical training
- 4.3-Class activities

### **5. Student Assessment Methods**

- 5.1 Discussions to assess applying and evaluating the information
- 5.2 Quiz to assess the acquired profession skills
- 5..3 Mid term exam to assess understanding **intellectual** skills
- 5.4 End of term exam to assess understanding **intellectual** skills

#### **1- Assessment Schedule**

Assessment : Discussions	Week 1-12
Assessment : Quiz	Week 3
Assessment : Mid term	Week 7
Assessment Final exam	Week 14
Assessment 4: Final exam	Week 14

#### **Weighting of Assessments**

Mid-Term Examination	10%
Final-term Examination	70%
Oral Examination.	10%

Practical Examination	10 %	
Semester Work	0 %	
Other types of assessment	%	
	<b>Total</b>	<b>100%</b>

## 6-List of References

6.1- **Course Notes:** Lecture materials

6.2- **Essential Books (Text Books):**

Eugene Hecht, "Optics", 4<sup>th</sup> Ed. Addison, 2003 Wesley, publisher

6.3- **Recommended Books**

Eugene Hecht, "Optics", 4<sup>th</sup> Ed. Addison, 2003 Wesley, publisher

6.4- **Periodicals, Web Sites, ... etc:** <http://www.hep.com>, <http://www.Physics2000>,  
<http://www.Physics today>

## 7-Facilities Required for Teaching and Learning

Personal computer, data show, power point application, and experimental tool devices.

**Course Coordinator:** Prof. Dr.\ Lotfy Abu Salem and Prof. Dr.\ Mabrok El-Mansy

**Head of Department:** Prof. Dr.\ L.I. Abou-Salem

**Date:**