

University Benha

Faculty Science

Course Specifications

Programme(s) on which the course is given : **Basic Science**

Major or Minor element of programs

Department offering the program: **Physics**

Department offering the course: **Physics**

Academic year/level **1st year /1st semester**

Date of specification approval: 2008

A- Basic Information

Title: Electromagnetic and Optics

Code: Phy101

Credit Hours:

Lecture: 4hr/week

Tutorial: 1 hr/week

Practical: 3 hr/week Total:8 hr/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- Study the quantum optics and laser.
- a4- Understand the optical measurements.
- a5- Know the electric fields and electric potentials

a6- Understand Kirchoff's law

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- Design the apparatuses which depend on the light.

c3- Create communication circuits and logic circuits.

d- General and Transferable Skills

d1- Solve problems.

d2- Work in team.

d3- Write reports

3- Contents

Topic	No. of hours	Lecture	Tutorial/Practical
Natural of light	12	4	2/6
Velocity of light	4	4	
Absorption and scattering	11	4	1/6
Quantum optics and laser	7	4	0/3
Optical measurement's	7	4	0/3
Coloumb's law and Gauss theorem for fields calculations	10	8	2/0
Electric potential	4	4	
Capacitances	12	4	2/6
Electric current and Kirchoff law	12	4	2/6
Magnetic field and motion of charges	12	4	2/6
Applications	4	4	

4- Teaching and Learning Methods

4.1- Lectures

4.2-Practical training

4.3-Class activities

5- Student Assessment Methods

5.1 Discussion to assess Understanding

5.2 Oral exam to assess understanding

5.3 Practical exam to assess applying and evaluating the information.

5.4 Final term exam to assess knowledge with understanding

Assessment Schedule

Assessment 1 Discussion week 3

Assessment 3 Oral exam week 1-12

Assessment 4 Practical exam week 13

Assessment 2 Final term exam week 14

Weighting of Assessments

Mid-Term Examination	5 %
Final-term Examination	60%
Oral Examination.	10%
Practical Examination	20 %
Semester Work	5 %
<u>Other types of assessment</u>	<u>%</u>
Total	100%

6- List of References

6.1- Course Notes: Lecture materials

6.2- Essential Books (Text Books)

Halliday, Fundamental of Physics, 6th edition, John Wiley & Sons.Inc.
(2006)

6.3- Recommended Books

6.4- Periodicals, Web Sites, ... etc

<http://www.hep.com>

[http://www.physics2000](http://www.physics2000.com)

[http://www.physics today](http://www.physics-today.com)

7- Facilities Required for Teaching and Learning

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

Course Coordinator: Prof. Dr. Nabil El-Nagar and Prof. Dr. Mabrok El-Mansy

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