Course Specifications

Program(s) on which the course is given : P., P.&las., P.&comp., P.&G., P.&Ch.
Major or Minor element of program : major - major - major - major - major.
Department offering the program : P., P., P.&Math., P.&G., P.&Ch.
Department offering the course Physics
Academic year / Level 1
Date of specification approval: 2012

A- Basic Information

Title:	**Electromagnetism**	**Code: P145**
Credit Hours:	**3h**	**Lecture:3h**
Tutorial: 00	**Practicals:00**	**Total: 3h**

B- Professional Information

1 – Overall Aims of Course

at the end of this course, the student should be able to understand the general equation and some applications of the electromagnetic phenomena

2 – Intended Learning Outcomes of Course (ILOs)

a Knowledge and Understanding:

The student should be able to

a1- Identify the force on a stationary charge due to other charges at rest.
a2- State Gauss' law and appreciate its consistency with Coulomb's law; apply it usefully for charge distributions with high symmetry.
a3- Identify the magnetic field, using the Biot-Savart law or Ampère's law as appropriate, for simple (but useful) circuits supporting steady currents and to be able to calculate the forces on such circuits when situated in a steady magnetic field.
a4- Recognize the electric and magnetic field vectors in

circumstances where Faraday's law is valid, and solve related problems; give examples of the wide range of practical applications.
a5- Recognize the circuit parameters to the fields and the energy of those fields; know the features of transient response for circuit parameters in simple circuits.
a6- Define the fields commonly used in electromagnetism, and state the laws these fields obey.

b Intellectual Skills: the student should be:-

b1- able imagine and differentiate how the electromagnetic field can be used in the different apparatus like acceleration, X-ray types

b2- Calculate and be able to use the laws of physics associated with the module and solve simple problems

c - Professional and Practical Skills

c1- Able to apply the laws of physics associated with the module to practical situations.
c2- apply and use the theoretical background for the different electromagnetic applications

d General and Transferable Skills

d1- Gained confidence and facility in systematic approaches to problem solving, improved report writing skills.
d2- Developed an ability to work either independently or as a group.
d3- Organize themselves to meet deadlines.
d4- evaluates and checks their own knowledge

3- Contents

Topic	No. of hours	Lecture	Tutorial/Practical
Dipole	8	4	
field of charge at a great distance	4	2	
Gauss's theory	4	2	
Stoke's theory	4	2	
Maxwell equation's	10	5	

4– Teaching and Learning Methods

4.1- lectures

4.2 –activities

4.3- internet search

4.4- individual theoretical studies (reports)

5- Student Assessment Methods

5.1 mid term exam to assess understanding of concepts and solving problems

5.2- final term exam to assess solving problems

Assessment Schedule

Assessment 1	every five weeks
Assessment 2	at the end of the semester

Weighting of Assessments

Mid-Term Examination	
20 %	
Final-term Examination	**60 %**
Semester Work	**20 %**
Total	**100 %**

6- List of References

6.1- Course Notes

6.2- Essential Books (Text Books)

physics a general course by I. V. Savelyev

6.3- Recommended Books

theoretical physics by A. S. Kompanexts

6.4- Periodicals, Web Sites, … etc

7- Facilities Required for Teaching and Learning

overhead projector , and data show

Course Coordinator: Prof.Dr.M.M.El-Kholy

Head of Department:Prof.Dr. Sana Maize

Date: / /