



A. Basic Information

Course Title: Electromagnetic fields

Code: EP212

Lecture:3

Tutorial:2

Practical: -

Total: 5

Program on which the course is given: BSc Electrical Engineering (Electrical Power and machines)

Major or minor element of program: NA

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level: second Year / First Semester

Date of specifications approval: 10/5/2006

B. Professional Information

1. Overall aims of course

By the end of the course the students will be able to:

- Understand the vector analysis , the electrostatic and static magnetic field and learn practical applications about the electromagnetic fields.
- Understand the graduates with sufficient information about Static electric field laws and the static magnetic field laws and their practical application.

2. Intended Learning outcomes of Course (ILOs)

a. Knowledge and Understanding:

- a1) Concepts and theories of mathematics and sciences, appropriate to the discipline
- a3) Characteristics of engineering materials related to discipline
- a5) Methodologies of solving engineering problems, data collection interpretation
- a8) Current engineering technologies as related to disciplines



a18) Theories and techniques for calculating short circuit, motor starting and voltage drop

b. Intellectual Skills

- b2) Select appropriate solutions for engineering problems based on analytical thinking
- b3) Think in a creative and innovative way in problem solving and design
- b4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources
- b5) Assess and evaluate the characteristics and performance of components, systems and processes
- b7) Solve engineering problems, often on the basis of limited and possibly contradicting information
- b12) Create systematic and methodic approaches when dealing with new and advancing technology
- b13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering

C. Professional and Practical Skills

- c1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to solve engineering problems
- c5) Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design experiments, collect, analyze, and interpret results

d. General and Transferable Skills

- d1) Collaborate effectively within multidisciplinary team
- d3) Communicate effectively

3. Contents



No	Topic	No of hours	ILOs	Teaching / learning methods and strategies	Assessment method
1	Vector analysis,	5	a1, a3, b2, b3, c1	Lectures	Home Assignments, Quizzes
2	Static electric field laws	5	a3, a5, b4, b5, c1	Lectures	Home Assignments, Quizzes
3	Electric flux and Gauss's law	5	a5, a18, b7, b12	Lectures	Home Assignments, Quizzes
4	applications	5	a3, a5, b4, b5, c1	Lectures	Home Assignments, Quizzes
5	Electric flux and Gauss's law	5	a1, a3, b2, b3, c1	Lectures	Home Assignments, Quizzes
6	Electrostatic field work and potential	5	a8, a18, b12, b13, c5	Lectures	Home Assignments, Quizzes
7	Electrostatic field work and potential	5	a8, a18, b12, b13, c5	Lectures	Home Assignments, Quizzes
8	Mid term exam				
9	Current density and conductor	5	a1, a3, b2, b3, c1	Lectures	Home Assignments, Quizzes
10	Conductor properties	5	a3, a5, b4, b5, c1	Lectures	Home Assignments, Quizzes
11	Materials in electrostatic field (dielectric)	5	a3, a5, b4, b5, c1	Lectures	Home Assignments, Quizzes
12	Static magnetic field	5	a8, a18, b12, b13, c5	Lectures	Home Assignments, Quizzes
13	Forces and torques in	5	a8, a18, b12, b13, c5	Lectures	Home Assignments,



	magnetic field				Quizzes
14	Maxwell's equations	5	a8, a18, b13, c5	Lectures	Home Assignments, Quizzes
15	Final exam				
16					

4. Teaching and Learning Methods

Lectures
 Class activity
 Case study
 Assignments / homework

5. Student Assessment Methods

Assignments to assess knowledge and intellectual skills
 Quiz to assess knowledge, intellectual and professional skills
 Mid-term exam to assess knowledge, intellectual, professional and general skills
 Oral exam to assess knowledge and intellectual skills
 Final exam to assess knowledge, intellectual, professional and general skills

6. Assessment schedule

Assessment 1 on weeks 2, 5, 9, 11
 Assessment 2 Quizzes on weeks 4, 6, 10, 12
 Assessment 3 Mid-term exam on week 8
 Assessment 4 Final exam on week 15

7. Weighting of Assessments

Mid- Term Examination	10%
Final- Term Examination	60%
Oral Examination	00%



Practical Examination	00%
Semester Work	20%
Other	10%
Total	100%

8. List of References

8.1 Course Notes

Course notes (Part I) prepared by Prof. Dr. Sayed A. Ward .

Course notes (Part II) prepared by Dr. Samia Mansour

8.2 Essential Books (Text Books)

- William H. Hyat, Jr. John A. Buck, Engineering Electromagnetics, Sixth edition, Mc Graw-Hill, 2001. Recommended Books

8.3 Periodicals Web sites, etc

Researchcom, www Googlecom

Recommended books

1. C.R. Paul, K.W.White and S. Y. Nasar, "Introduction to electromagnetic fields", 3rd edition, Mc. Graw - Hill Book Company, New York, 1998.

2. Shaume's series for electromagnetic fields

9. Facilities Required for Teaching and learning

Presentation board, computer and data show

Laboratory



BENHA UNIVERSITY



COURSE SPECIFICATIONS (2011-2012)



FACULTY OF ENGINEERING

Course coordinator: Prof Dr Said El- Ward
Course instructor: Dr Samia Mansour
Head of department: Prof Dr Mousa Abd-Allah **Date :** 7/12/2011