



A. Basic Information

Course Title: Electrical and Mechanical Engineering

Code: ?????

Lecture: 2

Tutorial: 2

Practical: -

Total: 4

Program on which the course is given: B.Sc. Civil Engineering

Major or minor element of program: Major

Department offering the program: Civil Engineering Department

Department offering the course: Electrical and Mechanical Engineering Departments

Academic year / level: Second Year / First Semester

Date of specifications approval: 10/5/2006

B. Professional Information

1. Overall aims of course

Study of the decision “ making processes which mechanical engineers use in the formulation of plans for the physical realization of machines. The fundamentals of decision making, the mathematical and analytical tools are applied. These fundamentals are applied to many typical design situations which arises in the design or the selection of the elements of electrical and mechanical systems.

Intended Learning outcomes of Course (ILOs)

a. Knowledge and Understanding:

a.1) Concepts and theories of mathematics and sciences, appropriate to the discipline.

a.3) Characteristics of engineering materials related to discipline.

a.4) Principles of design including elements design, process and/or a system related to specific disciplines.

a.19) Basic theories and principles of some other engineering and mechanical engineering disciplines providing support to mechanical power and energy disciplines.



b. Intellectual Skills

- b.3) Think in a creative and innovative way in problem solving and design.
- b.6) Investigate the failure of components, systems, and processes.
- b.7) Solve engineering problems, often on the basis of limited and possibly contradicting information.
- b.13) Evaluate mechanical power and energy engineering design, processes and performances and propose improvements.

c. Professional and Practical Skills

- o Skill in the use of appropriate mathematical methods for solving specific engineering and/or electrical engineering problems.
- o Use of the scientific tools and methods in the solution of electrical engineering problems.
- o Skill in the use of appropriate mathematical methods for solving specific engineering and/or Mechanical engineering problems.
- o Use of the scientific tools and methods in the solution of Mechanical engineering problems.

d. General and Transferable Skills

- Presentation skills, manipulation and sorting of data using modern technology
- Resource and management time.
- Effective communication with colleagues and others using writing and/ or oral methods.
- Use of scientific tools and methods in solution of electric power system problems.
- Work effectively as a member in a multi-disciplinary team.

2. Contents

No	Topic	No. of hours	ILOs	Teaching / learning methods and strategies	Assessment method
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1	Basics and fundamentals of electrical engineering	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
2	The main components and parts of electrical power system	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
3	Applications of electrical power in civil engineering filed	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
4	Electrical machines basics and fundamentals	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
5	Electrical transformers and its applications	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Report
6	AC electrical motors and its applications	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
7	DC and special motors and its applications	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Presentation board, computer and data show	Home Assignments, Quizzes, Oral Exam
8	Mid-Term exam				



9	Internal combustion engines	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Report
10	Joining elements	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Assignment
11	Pins, keys and splines	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Report
12	Couplings, clutches and brakes	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Assignment
13	Power transmission units	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Assignment
14	Hydraulic drive systems	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Assignment
15	Contractors mechanical plants	4	a1, a2,a3,a4, b1, b2, c1, c2,c3, d1	Lecture/data show	Report
16	Final exam				

3. Teaching and Learning Methods

Lectures

Practical training / laboratory

Seminar / workshop

Class activity

Case study

Assignments / homework



4. 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.

5. Assessment schedule

Assessment 1 Assignments on weeks 1-4, 5-6, 10 and 12-14

Assessment 2 Quizzes on weeks 4, 6, 11, and 13

Assessment 3 Mid-term exam on week 8

Assessment 4 Oral Exam on week 15

Assessment 5 Final exam on week 16

6. Weighting of Assessments

05% Home assignments

05% Quizzes

10% Mid-term examination

20% Oral examination

60% Final-term examination

100% Total

7. List of References

7.1 Course Notes

Course notes prepared by instructor.



7.2 Essential books

- Electrical Machines, By Prof. Dr Abdelsalam Hamza
- Text Books for Electrical Engineering and its applications
- Text Books for Mechanical Engineering and its applications

8. Facilities Required for Teaching and learning

Lecture room equipped with overhead projector;
Presentation board, computer and data show; and
Laboratory.

Course coordinator: Prof. Dr. Abd El Salam H. Hamza

Course instructor: Prof. Dr. Abd El Salam H. Hamza and Dr. Raouf Tawfik Fahmy

Head of department: Prof. Dr. Ahmed Abd El Fattah

Date: October, 2011