A- Basic Information

Course Title: Electrical Power Engineering **Code**: EPE 223
Lecture: 4 **Tutorial**: 2 **Practical**: - **Total:** 6
Program on which the course is given: B.Sc. Electrical Engineering (Power)
Major or minor element of program: Major
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: **Second** Year / **Second** Semester
Date of specifications approval: 10/5/2006

B- Professional Information

1- Overall aims of course:

The aims of the course are:

- Discuss the main components of electrical power transmission systems.
- Knowing of the types of Tie lines of electrical energy networks.
- Knowing of the different types of the electrical distribution systems.
- Knowing of the contents of the Substations and the different types of circuit breakers.
- Knowing the main components of the DC power transmission systems.
- Studying the Transients and dynamics of over voltages in high-voltage systems.
- Discussing the Over voltage protection equipments.
- Studying the Electrical insulation co-ordination.

2- Intended learning outcomes of course (ILOs)

By completion of the course, the student should be able to:

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.

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.

c- Professional and Practical Skills

c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.
c.5) Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design experiments, collect, analyze, and interpret results.
c.8) Apply safe systems at work and observe the appropriate steps to manage risks.

d- General and Transferable Skills

d.1) Collaborate effectively within multidisciplinary team.
d.2) Work in stressful environment and within constraints.
d.3) Communicate effectively

3- Contents

No.	Topic	No. of hours	ILO's	Teaching / learning methods and strategies	Assessment method
1	Introduction of electrical power transmission systems.	6	a1, a3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
2	Tie lines of electrical energy networks.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes

3	Introduction of electrical distribution systems.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
4	Substations and circuit breakers.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
5	Substations and circuit breakers.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
6	DC power transmission systems.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
7	DC power transmission systems.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
8	Mid-Term Exam				
9	Transients and dynamics of over voltages in high-voltage systems.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
10	Transients and dynamics of over voltages in high-voltage systems.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
11	Over voltage protection equipments.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
12	Over voltage protection equipments.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
13	Electrical insulation co-ordination.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
14	Electrical insulation co-ordination.	6	a1, a3, a4, b3, b6, b7, c2, c5, c8, d1, d2, d3	Lectures, Class activity, Assignments / homework	Home Assignments, Quizzes
15	Final Exam				

16	

4- Teaching and Learning Methods

Lectures
Practical training / laboratory
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.
Final exam to assess knowledge, intellectual, professional and general skills.

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

Weighting of Assessments

10% Home assignments
10% Quizzes
20% Mid-term examination
60% Final-term examination
100% Total

6- List of References

Course notes

Course notes prepared by instructor.

Essential books

Recommended books

7- Facilities required for teaching and learning

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

Course coordinator: Prof. Dr. ibtisam
Course instructor: Dr. Mahmoud Abu-Srei

Head of Department: Prof. Dr. Mousa Abd-allah Date 1/1/2012