



### A. Basic Information

**Course Title:** Transmission & Distribution of Electrical Power      **Code:** EP311  
**Lecture:** 3      **Tutorials:** 2      **Practical:** -      **Total:** 5  
**Program on which the course is given:** BSc 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:**      **Third 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:

- Understanding the TL's performance (Electrical & Mechanical)
- Supplying graduates with sufficient information about (Insulators –Corona –DC&AC Distribution –Voltage drop –Power loss- Underground Cables – DC electric power transmission)

#### 2. Intended Learning outcomes of Course (ILOs)

##### a. Knowledge and Understanding:

- a1) Concepts and theories of mathematics and sciences, appropriate to the discipline
- a4) Principles of design including elements design, process and/or a system related to specific disciplines
- a5) Methodologies of solving engineering problems, data collection interpretation
- a11) Professional ethics and impacts of engineering solutions on society and environment
- a15) Principles of operation and performance specifications of electrical and electromechanical engineering systems
- a17) Basic electrical power system theory
- a21) Basic power system design concepts for underground, cable tray, grounding and lighting systems



**b. Intellectual Skills**

- b1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems
- b2) Select appropriate solutions for engineering problems based on analytical thinking
- b3) Think in a creative and innovative way in problem solving and design
- b5) Assess and evaluate the characteristics and performance of components, systems and processes
- b6) Investigate the failure of components, systems, and processes
- b7) Solve engineering problems, often on the basis of limited and possibly contradicting information
- b9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact
- b13) Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering
- b16) Analyze the performance of electrical power generation, control and distribution systems

**c. Professional and Practical Skills**

- c1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to solve engineering problems
- c6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs
- c8) Apply safe systems at work and observe the appropriate steps to manage risks
- c10) Apply quality assurance procedures and follow codes and standards
- c11) Exchange knowledge and skills with engineering community and industry
- c16) Specify and evaluate manufacturing of components and equipment related to electrical power and machines
- c17) Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems

**d. General and Transferable Skills**

- d1) Collaborate effectively within multidisciplinary team
- d2) Work in stressful environment and within constraints
- d3) Communicate effectively



- d6) Effectively manage tasks, time, and resources
- d7) Search for information and engage in life-long self learning discipline
- d8) Acquire entrepreneurial skills
- d9) Refer to relevant literatures

### 3. Contents

No	Topic	No of hours	ILOs	Teaching / learning methods and strategies	Assessment method
1	Transmission lines, Inductance - Capacitance	5	a1, a17, b1,c1	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
2	Calculation of short, medium and long transmission lines	5	a3, a5, b2, c2, c3	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
3	Calculation of short, medium and long transmission lines	5	a3, a5, b2, c2, c3	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
4	Mechanical design - Insulators - Corona	5	a4, a5, b3, b5, b7, c3, c7	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
5	Mechanical design - Insulators - Corona	5	a4, a5, b3, b5, b7, c3, c7	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
6	Mechanical design - Insulators - Corona	5	a4, a5, b3, b5, b7, c3, c7	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
7	Mechanical design - Insulators - Corona	5	a4, a5, b3, b5, b7, c3, c7	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
8	Mid term exam				
9	DC & AC Distribution – Voltage drop – Power loss	5	a3, a5, a22, b7, c7	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
10	DC & AC Distribution –	5	a3, a5, a22, b7, c7	Lectures, Class activity,	Home Assignment,



	Voltage drop – Power loss			Assignments / homework	Quizzes
11	Underground Cables	5	a8, a14, a21, b13, b16, c8, c17, d8	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
12	Underground Cables	5	a8, a14, a21, b13, b16, c8, c17, d8	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
13	DC electric power transmission	5	A3, a4, a5, a7, b2, b6, b7, b16, c14, c16, c17, d2	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
14	DC electric power transmission	5	A3, a4, a5, a7, b2, b6, b7, b16, c14, c16, c17, d2	Lectures, Class activity, Assignments / homework	Home Assignment, Quizzes
15	Final exam				
16					

#### 4. Teaching and Learning Methods

Lectures

Class activity

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

#### 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 5 Final exam on week 15



### **7. Weighting of Assessments**

Home assignments	12%
Quizzes	12%
Mid-term examination	16%
<u>Final-term examination</u>	<u>60%</u>
Total	100%

### **8. List of References**

#### 8.1 Course Notes

- Course notes prepared by instructor

#### 8.2 Essential Books (Text Books)

- A textbook of electrical Power by Anand, 2004
- A textbook of Power Systems Engineering by R K Rajput, 2007

#### 8.3 Recommended Books

- "Electrical Power Systems", By Ashfaq Husain, 2004

### **9. Facilities Required for Teaching and learning**

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

**Course coordinator:** Prof Dr. Ebtisam Saied  
**Course instructor:** Dr. Samir M Abdel-Maksoud  
**Head of department:** Prof Dr Mousa Abd-Allah

**Date: 3 / 1 / 2012**