



Electrical and Renewable Energy Engineering Program

Course Specification - (2025-2026)

Electrical Power Engineering – ERE222

Academic Year	2025/2026	Semester	Spring
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1. Basic Information

Course Title (according to the bylaw)	Electrical Power Engineering				
Course Code (according to the bylaw)	ERE222				
Prerequisite:	Electromagnetic Fields - CCE211				
Department/s participating in delivery of the course	Electrical and Renewable Energy Engineering				
Number of credit hours/points of the course (according to the bylaw)	Credit Hours	Contact Hours			
		Lecture	Tutorial	Practical	Total
	3	2	1	1	4
Course Type	Compulsory - Major Requirements of Electrical and Renewable Energy Engineering				
Academic level at which the course is taught	Third Level				
Academic Program	Bachelor of Engineering of Electrical and Renewable Energy				
Faculty/Institute	Faculty of Engineering				
University/Academy	Nahda University				
Name of Course Coordinator	Dr. Mohamed Kourany Saad				
Course Specification Approval:	Department council		Faculty council		
Date of Approval of the course Specification:	13 / 9 / 2025		16 / 9 / 2025		



2. Course Overview

Introduction to the electric power system, application of a high voltage in electric power system, overhead transmission lines: parameter calculation, modeling, performance, and mechanical design, electric power distribution, underground cables, Determination of faults in underground cables, design of electrical distribution systems, insulated electrical cables, generation of high voltage, high-voltage measurement, electric insulation types, corona, earthing, and safety, Introduction to power system planning.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
A2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO1	Develop simulation to analyze the different electrical power engineering using MATLAB software packages.
A4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	CLO2	Present the project course in the electrical power by Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
		CLO3	Recognize of the Corona Effect of Overhead Transmission Line
B1	Select, model and analyze electrical power systems applicable to the Electrical Power and Renewable Energy Engineering	CLO4	Recognize and analysis of the basic concepts of Power System Components, and Power Factor Correction



Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	Program by applying the concepts of: generation, transmission and distribution of electrical power systems.	CLO5	Analysis of the Overhead Transmission Line and Undergrounding Transmission Lines
B2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO6	Recognize and analysis of the Mechanical Design of Overhead Transmission Lines
		CLO7	Determine of faults in underground cables

4. Teaching and Learning Methods

1. Interactive Lectures
2. Self-Learning
3. Experimental Learning
4. Projects
5. Field Visits
6. Report and Research
7. Discussion

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours				
			Lecture Hours	Tutorial Hours	Practical Hours	Self-learning (Assignments/ Project)	Other
1	Power System Components	4	2	1	1		-
2	Basic Principles Power System	6	2	1	1	Assignments 1/ (2 Hr)	-
3	Power Factor Correction	6	2	1	1	Assignments 2 (2 Hr)	-
4	Overhead Lines, Steady State Performance of Transmission Lines	4	2	1	1		-
5	Overhead Lines, Steady State Performance of Transmission Lines.	8	2	1	1	Assignments 3 (2 Hr)	Quiz 1 (2 Hr)
6	Mechanical Design of Transmission Lines (Properties and types of Conductors Materials)	4	2	1	1		-
7	Mid Term Exam						



8	Mechanical Design of Transmission Lines (Properties and types of Line Supports).	6	2	1	1	Assignments4 (2 Hr)	-
9	Mechanical Design of Transmission Lines (Properties and types of Insulators).	8	2	1	1	Assignments 5/ Project (4 Hr)	-
10	Calculation of SAG in Overhead Transmission Lines	10	2	1	1	Assignments 6/ Project (4 Hr)	Quiz 2 (2 Hr)
11	Corona Effect of Overhead Transmission.	8	2	1	1	Assignments 7/ Project (4 Hr)	-
12	Underground Cables (Construction, Types, Electric)	8	2	1	1	Assignments 8/ Project (4 Hr)	-
13	Comparison between Overhead Transmission Lines and Underground Cables	6	2	1	1	Project (2 Hr)	
14	Underground Cables (Distribution, Fault Location)	8	2	1	1	Assignments 9/ Project (4 Hr)	-
15	Revision/ Practical Exam	4	2	1	1	Discussion Project Course	-
16	Final Exam						

1. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Mid-term written Exam	7	20	20%
2	Final Written Exam	16	40	40%
3	Assignments	2- 14	10	10%
4	Quizzes	5, 10	10	10%
5	Final Practical Exam	15	10	10%
6	Report / Project	15	10	10%



2. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course	High Voltage Engineering M.S. Naidu, and V. Kamaraju, 2018.
	Other References	Electric Power Transmission and Distribution P.J. Freeman 2016. Power System Analysis Hadi Saadat 2014. HVDC Transmission, S. Kamakshaiah & V. Kamaraju, Tata McGraw hill education
	Electronic Sources	www.ekb.eg
	Learning Platforms	https://lms.nub.edu.eg/login/index.php
Supportive facilities & equipment for teaching and learning	Devices/Instruments	Data Show System
	Supplies	White Board
	Electronic Programs	MATLAB
	Skill Labs/ Simulators	Lab Facilities
	Virtual Labs	-
	Other (to be mentioned)	Library

Dr. Mohamed Kourany Saad
Course Coordinator

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