



Electrical and Renewable Energy Engineering Program

Course Specification - (2025-2026)

Energy Graduation Project (2) – ERE411

Academic Year	2025/2026	Semester	Fall
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1. Basic Information

Course Title (according to the bylaw)	Energy Graduation Project (2)				
Course Code (according to the bylaw)	ERE411				
Prerequisite:	Energy Graduation Project (1) – ERE321				
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	Contact Hours			
	Hours	Lecture	Tutorial	Practical	Total
	3	0	0	6	6
Course Type	Compulsory - Minor Requirements of Electrical and Renewable Energy Engineering				
Academic level at which the course is taught	Fifth 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

The aim of Project 2 is to conduct detailed design and verification based on the preliminary system design specifications reached in Project 1. Once the design and verification is complete, this should be followed by prototype implementation and testing. The outcome of Project 2 is a complete design, fully verified using standard verification tools and presented in the form of professional design documents and design drawings accompanied with bill of materials. At the end of Project 2, students are asked to submit a dissertation or project report and go through an oral examination after delivering a presentation of their work.

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.	CLO9	Build a prototype involving the transformation of the project (1) idea into a tangible, testable model to evaluate functionality and design, and then write down a robust report defining all phases of the project.
A3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the Electrical and Renewable Energy Engineering Program and within the principles and contexts of sustainable design and development.	CLO1	Use the codes and standards that govern the design and construction of the project and make a preliminary design according to these codes and standards.
A4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.		



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
A5	Practice research techniques and methods of investigation as an inherent part of learning.		
A6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO2	Discuss the requirements of the project with the different trades and coordinate between each other in addition to the exchange of the different project data
A7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO3	Perform the detailed calculations of the project parts and collect the different parts calculations to complete the whole project calculations.
A8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO4	Present the project design in the form of drawings and report to illustrate the design to the other group members and the supervisor.
A9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO5	Analyze the received comments on the design and any problems associated with the operation.
A10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO6	Modify the design to comply with the received comments and finalize the project design.
B1	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.	CLO7	Develop the accurate designs of subsystems or systems in electrical/electronic/digital/mechanical engineering.
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.		
B3	Design and implement: elements, modules, sub-systems or systems in electrical / electronic / digital engineering using technological and professional tools.		
B4	Estimate and measure the performance of an electrical/electronic/digital system and circuit		



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
	under specific input excitation, and evaluate its suitability for a specific application.		
B5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.		
D1	Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.		
D2	Identify, analyze and evaluate the energy's conversion processes and management techniques.		
D3	Model, analyze, design, implement, test and operate renewable energy systems such as solar photovoltaics, solar thermal, wind, biomass and waste, hydro-tidal and wave, and other renewable energy applications.	CLO8	Develop the accurate designs of renewable energy conversion systems.
D4	Select, analyze and control appropriate driving systems for different energy applications.		



4. Teaching and Learning Methods

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

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/ Presentation/Reports)
1	Lab: Discussing the Literature review to enhance the outcome of project 2.	6	0	0	6	0
2	Lab: Updated Gantt Chart for each project. Elaborating one of the designs for the modified project.	8	0	0	6	Assignment 1 (2 Hrs)
3	Lab: Apply the Report preparation essentials in project report. Design and test of the simulation model for the modified project.	8	0	0	6	Assignment 2 (2 Hrs)
4	Lab: Refining the resources and cite them correctly in the report. Design and test of the simulation model for the project.	9	0	0	6	Report 1 (3 Hrs)
5	Lab: Update the major modifications of the project implementation milestones with clear assignment of tasks among project team members. Searching for the suitable Components for each modified project.	9	0	0	6	Presentation 1 (3Hrs)



	Check the availability in local market.					
6	Lab: Rearrange the tasks for each team member and multi/ parallel task assignments. Approaching the final design with the available components.	8	0	0	6	Assignment 3 (2 Hrs)
7	Lab: Buy all the components and start assembly of the modified project.	8	0	0	6	Assignment 4 (2 Hrs)
8	Lab: Presenting the accomplished tasks. Prototype implementation and testing, Cont.	8	0	0	6	Assignment 5 (2 Hrs)
9	Lab: Presenting the accomplished tasks. Prototype implementation and testing, Cont.	8	0	0	6	Assignment 6 (2 Hrs)
10	Lab: Presenting the accomplished tasks. Prototype implementation and testing, Cont.	9	0	0	6	Report 2 (3 Hrs)
11	Lab: Judging each project, and prototype implementation and testing, Cont.	8	0	0	6	Presentation 2 (3Hrs)
12	Lab: Measuring the performance of the modified version of each project Cont. First Assessment of the modified project.	8	0	0	6	Assignment 7 (2 Hrs)
13	Lab: Measuring the performance of the modified version of each project Cont. Each student Criticizes other projects. Design Modification, Report first draft submission	8	0	0	6	Assignment 8 (2 Hrs)
14	Lab: Enhancement Plan. Check for available components, Report Revision	9	0	0	6	Report 2 (3 Hrs)



15	Lab: Enhancement Plan Cont. Correction plan for the project. Final Report for Project 2.	9	0	0	6	Presentation 3 (3Hrs)
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5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Student Activities (Presentations, assignments and reports)	Throughout all weeks	50	50%
2	Final/Oral Exam	16	50	50%

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Student should visit EKB for finding resources for his project. https://www.ekb.eg/ar/login
	Other References	-
Supportive facilities & equipment for teaching and learning	Devices/Instruments	-
	Supplies	-
	Electronic Programs	Homer, PVsyst, Matlab, Etap, Proteus, PowerWorld, Autocad, Reveit, Ecodial Software Programs, ...etc.
	Skill Labs/ Simulators	Faculty Labs and Simulators
	Virtual Labs	Internet Access
	Other	Laboratory Usage

Dr. Mohamed Kourany Saad
Course Coordinator

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