



Electrical and Renewable Energy Engineering Program

Course Specification - (2025-2026)

Environmental Control – MPE473

Academic Year	2025/2026	Semester	Fall
---------------	-----------	----------	------

1. Basic Information

Course Title (according to the bylaw)	Environmental Control				
Course Code (according to the bylaw)	MPE473				
Prerequisite:	--				
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	2	0	4
Course Type	Elective - 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. Hassan Moh. Mahmoud				
Course Specification Approval:	Department council		Faculty council		
Date of Approval of the course Specification:	13 / 9 / 2025		16 / 9 / 2025		



2. Course Overview

Addressing climate change will require new and very creative engineering skills. The course will discuss: (a) the technical and human challenges of using intermittent renewable energy sources to provide the steady energy and liquid fuels our society depends on, and; (b) the possible energy and fuel alternatives, their cost of production and size of the investment needed to make a meaningful contribution towards addressing global warming.

Broad overview of fundamental and applied concepts of energy in the overall context of the modern and built environment. Includes mechanical and electrical fundamentals to analyze the built environment, energy flows and balances, demand and supply solutions, tools such as life cycle analysis for assessment/evaluation, and emerging issues in the built environment.

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
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	Apply engineering design processes to develop solutions that meet specified technical requirements.
		CLO2	Evaluate engineering solutions within the principles of sustainable design and development.
A4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	CLO3	Utilize contemporary technologies and tools for monitoring and controlling environmental parameters such as temperature, humidity, ventilation, lighting, and air quality.
A5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO4	Analyze information from relevant and credible sources.
		CLO5	Apply codes of practice and engineering standards in the analysis,



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
			design, and implementation of engineering solutions.
A9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO6	Demonstrate leadership and teamwork skills in planning, managing, and implementing environmental control projects.
A10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO7	Acquire new knowledge relevant to engineering practice and technological advancement.

4. Teaching and Learning Methods

1. Interactive Lectures
2. Self-Learning
3. Discussion
4. Tutorials
5. Report and research

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, 2	Addressing climate change will require new and very creative engineering skills.	6	2	2	0	2	-
3, 4	The technical and human challenges of using intermittent renewable energy sources to provide the steady energy and liquid fuels our society depends on,	6	2	2	0	2	-
5	the possible energy and fuel alternatives, their cost of production and size of the investment needed to make a meaningful contribution towards addressing global warming.	6	2	2	0	2	-



6	Broad overview of fundamental and applied concepts of energy in the overall context of the modern .and built environment	6	2	2	0	2	-
7	Mid Term Exam						
8	Broad overview of fundamental and applied concepts of energy in the overall context of the modern .and built environment	6	2	2	0	2	
9, 10	Includes mechanical and electrical fundamentals to analyze the built environment,	6	2	2	0	2	-
11	Includes mechanical and electrical fundamentals to analyze flows and balances	6	2	2	0	2	-
12	Includes mechanical and electrical fundamentals to analyze demand and supply solutions	6	2	2	0	2	-
13, 14	Includes mechanical and electrical fundamentals to analyze tools such as life cycle analysis for assessment/evaluation, and emerging issues in the built environment.	6	2	2	0	2	-
15	Revision	6	2	2	0	2	-
16	Final Term Exam						

5. 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	20	20%
5	Report	12	10	10%



6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course	Olgyay, V., The Building Environment: Active and Passive Control Systems, 3rd ed., Wiley.
	Other References	ASHRAE, ASHRAE Handbook—HVAC Applications, 2023.
	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
	Supplies	White Board
	Electronic Programs	MATLAB Programs
	Skill Labs/ Simulators	—
	Virtual Labs	—
	Other (to be mentioned)	Lecture Hall and Laboratory Usage

Dr. Hassan Moh. Mahmoud
Course Coordinator

Dr. Mohamed Kourany Saad
Program Coordinator