



Electrical and Renewable Energy Engineering Program

Course Specification - (2025-2026)

Quality Control – MPE326

Academic Year	2025/2026	Semester	Fall
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1. Basic Information

Course Title (according to the bylaw)	Quality Control				
Course Code (according to the bylaw)	MPE326				
Prerequisite:	Probability and statistics – BAS122				
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

History of quality control Quality definitions and concepts, Process capability analysis, Theory of control charts, Statistical control charts for attributes, Statistical control charts for variables, Acceptance sampling: Principles and concepts, Acceptance sampling by attributes, Acceptance sampling by variables.

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	Describe types of Quality Control Tools and Techniques
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.	CLO2	Apply engineering design processes to develop solutions that satisfy specified technical requirements.
		CLO3	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.	CLO4	Utilize contemporary technologies relevant to Electrical and Renewable Energy Engineering applications.
		CLO5	Apply codes of practice and engineering standards in the analysis, design, and implementation of engineering solutions.
A10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO6	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	History of quality control Quality definitions and concepts	7	2	2	0	3	-
2	History of quality control Quality definitions and concepts	7	2	2	0	3	-
3	Process capability analysis.	7	2	2	0	3	-
4	Process capability analysis.	7	2	2	0	3	-
5	Theory of control charts	9	2	2	0	3	Quiz 1 (2 Hr)
6	Statistical control charts for attributes	7	2	2	0	3	-
7	Mid Term Exam						
8	Statistical control charts for attributes	7	2	2	0	3	-
9	Statistical control charts for variables	7	2	2	0	3	-
10	Statistical control charts for variables	9	2	2	0	3	Quiz 2 (2 Hr)
11	Acceptance sampling: Principles and concepts	7	2	2	0	3	-
12	Acceptance sampling by attributes	7	2	2	0	3	-
13	Acceptance sampling by variables.	7	2	2	0	3	-
14	Acceptance sampling by variables.	7	2	2	0	3	-
15	Revision	7	2	2	0	3	-
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	Montgomery, D. C. (2020). Introduction to Statistical Quality Control (8th ed.). Wiley
	Other References	1) Sinha, A. K., & Vatsa, R. (2022). Control Charts and Capability Analysis for Statistical Process Control. 2) Mitra, A. (2021). Fundamentals of Quality Control and Improvement (5th ed.). Wiley
	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
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