FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Quality Control

Information :

Course Code :	MAN 481	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Associate Professor	Hassan Mohamed Shams Eldin Elsayed Eleashy	
Associate Professor	Arafa Soliman Sobh Khalil Arafa	5
Teaching Assistant	Eman Mohamed Hammad Ahmed	1
Teaching Assistant	Amira Khaled Hasan Mohamed Elkodama	

Area Of Study :

- Introduce the basic concepts of quality control of products, and services and classify the quality characteristics of products, and services.
- Enrich the studentôs basic knowledge about the characteristics of the quality control system of an enterprise.
- Train students to use the quality improvement tools, and measure the capability of a process to meet stated specifications.

Description :

Fundamentals of Statistical Quality Control; Frequency Distributions; Measures of Central Tendency; Dispersion and Shapes; Probability Distributions: Binomial, Poisson and Normal. Control Charts: Introduction, Attribute Control Charts and Variable Control Charts. Process Capability Analysis; Acceptance Sampling: Introduction; Sampling Plans and Techniques: Single, Double, Multiple and Sequential Sampling Plans.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Define the dimensions of product's quality.
2 -	Classify the basic types of SQC data
3 -	Describe the basic types of control charts and the conditions of using each one.
4 -	Explain the rules of switching among the types of sampling inspection (normal, tightened, and reduced inspections).
b.Intellectual Skills: :	
1 -	Analyse the results of statistical test models to take a proper decision.
2 -	Calculate the parameters of several types of quality control tools.
3 -	Select the proper type of a control chart with respect to the type of the pro-cess data.
4 -	Analyse the capability of a manufacturing process.

c.Professional and Practical Skills: :	
1 -	Analyse the data of a process quality to evaluate the status of a process and take corrective actions if needed.
2 -	Use the suitable type of control chart to each type of quality characteristic.
3 -	Use the acceptance sampling techniques to accept or reject the incoming lots of materials and spare parts.
d.General and Transferable Skills: :	
1 -	Work in stressful environment and within constraints through assignments and course project.
2 -	Effectively manage tasks, time, and resources.
3 -	Search for information and engage in life-long self-learning discipline through self-learning assignments.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Basics of data analysis: Measures of central tendency ï Measures of dispersion.		4	1
Introduction: Course outlines &Information ï Quality Engineering ï Eight dimensions of product quality-Six sigma quality control-		2	0
Statistical probability distributions: Discrete probability distributions ï Continuous probability distributions.		4	1
QC improvement tools: CE diagrams- Pareto analysis- Defect concentration chart- Stratification analysis Control charts.		4	1
Statistical tests: Tests on mean (z-test and t-test) - Test on variance (chi-square-test).		4	2
Control charts for variables: x-bar & R charts - xbar & s charts ï Natural tolerance limits ï process capability indices ï Type-I & Type-II errors.		4	2
Control charts for attributes: p- chart - c- chart ï uchart.		4	2
Acceptance sampling plans for attributes.		4	2
Project follow-up		0	2
Midterm Exams		0	2

Teaching And Learning Methodologies :

Interactive Lecture
Discussion
Problem-based Learning
Report
Experiential Learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	10.00		
Final Exam	40.00	15	
Midterm Exam 1	15.00	6	

Midterm Exam 2	15.00	11	
Project	10.00		
Quizzes	10.00		

Recommended books :

Chandra, M; ñStatistical Quality Controlò, ISBN 0-8493-2347-9, Publish-er: CRC Press, Latest editions.