

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
Lecturer	Arafa Soliman Sobh Khalil Arafa	5
Lecturer	Arafa Soliman Sobh Khalil Arafa	5
Teaching Assistant	Eman Mohamed Hammad Ahmed	1
Teaching Assistant	Manar Magdy Hassan Mohamed	1

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 student's 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.

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 process 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 . Measures of dispersion.		4	1
Introduction: Course outlines & Information . Quality Engineering . Eight dimensions of product quality-Six sigma quality control-		2	1
Statistical probability distributions: Discrete probability distributions . 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 . Natural tolerance limits . process capability indices . Type-I & Type-II errors.		4	2
Control charts for attributes: p- chart - c- chart . chart.		4	2
Acceptance sampling plans for attributes.		4	2
Project follow-up		0	1
Midterm Exams		0	2

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion
Project
Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments, Participation, & Quizzes	20.00		Reports, follow up during tut. /lab work, & written exam
Final examination	40.00		Written
Mid-term examination(s)	30.00		Written Exam
project	10.00		Practical & oral Project Exam

Recommended books :

1. Text Book: Montgomery, D; Introduction to Statistical Quality Control ISBN 978-0-470-16992-6, Publisher: John Wiley and Sons, Latest editions. 2. Lecture notes on the course moodle page, FUE website.