Course Specification
(Bachelor)

Course Title:	*Quality Control*
Course Code:	*INE 4331*
Program:	*Bachelor of Science in Industrial Engineering*
Department:	*Industrial Engineering*
College:	*College of Engineering*
Institution:	*King Khaled University*
Version:	*2*
Last Revision Date:	*8/12/2025*

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	x Department	☐ Track	☐ Others
B.	x Required		☐ Elective		
3. Level/year at which this course is offered: (7/4)					
4. Course general Description:					
This course will present the theory and methods of quality monitoring including process capability, control charts, acceptance sampling, quality engineering, and quality design.					
5. Pre-requirements for this course (if any):					
INE 3312					
6. Co-requisites for this course (if any):					
NIL					
7. Course Main Objective(s):					
The objectives include: • To understand the basic concepts of quality monitoring. • To understand the statistical underpinnings of quality monitoring. • To learn various available statistical tools of quality monitoring. • To learn the statistical and economical design issues associated with the monitoring tools. • To demonstrate the ability to design and implement these tools.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	understand the basic concepts of quality monitoring.	K1, K2	Lectures and tutorials	Assignments Midterm Exam Final Exam
1.2	understand the statistical underpinnings of quality monitoring.			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.3	learn various available statistical tools of quality monitoring			
1.4	learn the statistical and economical design issues associated with the monitoring tools.			
1.5	demonstrate the ability to design and implement these tools.			
2.0	Skills			
2.1	Explain the main attributes of Statistical Quality Control		Lectures and tutorials	Assignments Midterm Exam Final Exam
2.2	Question and interpret production or service quality by using different quality control charts,	S2, S3, S4		
1.3	Distinguish usage areas of control charts in engineering			
14	Calculate and interpret process capability indexes			
1.5	Design and implement control charts and use software to statistical quality control			
3.0	Values, autonomy, and responsibility			
3.1	Work individually or within a team and communicate effectively to perform the assigned tasked (Homework/Group Project)	V2, V4	Lectures and tutorials	Project

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to the course / Chapter 1: Quality Improvement in the Modern Business Environment	3
2	Chapter 3: Modeling Process Quality Chapter 4: Inferences about Process Quality	4
3	Chapter 5: Methods and Philosophy of Statistical Process Control	4
4	Chapter 6: Control Charts for Variables. *Lab: Use Excel to plot control charts in Ch6*	6
5	Chapter 7: Control Charts for Attributes. *Lab: Use Excel to plot control charts in Ch7*	6
6	Chapter 8: Process and Measurement System Capability Analysis. *Lab: Use Excel to Process Capability in Ch8*	10
7	Chapter 9: Cumulative Sum and Exponentially Weighted Moving Average Control Charts. Lab: *Use Excel to plot control charts in Ch9*	4
8	Chapters 15: Acceptance Sampling for Attributes.	4

	Lab: *Use Excel to solve problem in sampling*	
9	Chapter 15 *Final Exam Review and Q&A* Final project presentation	4
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	6 to 8 Assignments	2, 3, 4, 5, 6, 7, 8, 9	25
2.	Quiz 1	3	
3.	Quiz 2	7	
4.	Project	12	5
5.	Mid Term Exam 1	5	15
6.	Mid Term Exam 2	10	15
7.	Final Exam	13	40
...			100

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	*"Statistical Quality Control: A Modern Introduction" (8th Edition)* *Author: Douglas C. Montgomery* *Publication Year: 2023.* *Publisher: Wiley* *ISBN: 9781119833428*
Supportive References	Engineering Statistics by Douglas C. Montgomery, George C. Runger, and Norma F. Hubele, John Wiley & Sons, Inc., New York. Applied Statistics and Probability for Engineers Second Edition by Douglas C. Montgomery and George C. Runger, 1999, John Wiley & Sons, Inc., New York.
Electronic Materials	Lecture slides on course blackboard webpage
Other Learning Materials	– Multimedia associated with the text book and the relevant websites Customized program available with Software homepage

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classrooms, computer lab.**
Technology equipment (projector, smart board, software)	**Projector or smart board** **Software: SPSS or R**
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (Questionnaire)
Effectiveness of Students assessment	Faculty	Direct
Quality of learning resources	Program Leaders	Direct
The extent to which CLOs have been achieved	Faculty	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Reviewed by Curriculum Committee Approved by Quality Committee
REFERENCE NO.	**9-6-47**
DATE	**25/06/1447**