Module (Course Syllabus) Catalogue

2022-2023

College/ Institute	Erbil Technical Engineering College	
Department	Mechanical and Energy Engineering	
Module Name	Quality Control	
Module Code	QUC 804	
Degree	Bachler *	
Semester	Second Semester *	
Qualification	PhD	
Scientific Title	Assistant Professor	
ECTS (Credits)	4	
Module type	Prerequisite * Core	
Weekly hours	2	
Weekly hours (Theory)	(2) hours class	(27)Total hours workload
Weekly hours (Practical)	( ) hr Class	( ) Total hrsworkload
Number of Weeks	12	
Lecturer (Theory)	Assist. Prof. Dr. Abdulkhalek	
E-Mail& Mobile NO.	abdulkhalek.kadir@epu.edu.iq	
Lecturer (Practical)	-	
E-Mail & Mobile NO.		
Websites		

Course Book

Course Description	This course consists of two main parts study in a one year of two courses at the technical engineering college. The second part contains the subjects which are related to Quality topics in industrial, commercial, and serviced establishments. It starts with several definitions of quality by scientists, then understanding quality management, quality management system QMS, quality control QC, quality assurance QA, quality dimensions, considerations of quality, approaches to quality, meaning of control, quality policy, quality objectives, quality improvement, quality auditing, measurable and non-measurable quality characteristics, quality manual, ISO 9000, ISO 9001, International standards, national standards. The subject includes statistical quality control SCQ, solve examples which contain control chars, X-bar- R charts, control of the process, control chart by using counts.
Course objectives	ئەم کۆرسە یان ئەم وانەیە ئەم پەیامە گرنگانەی خوارەوە دەبەخشێت: یەکەم: فێر بوونی قوتابی خوێندکار بە بنەما و پرەنسیپەکانی کوالێتی بە شێوەیەکی گشتی و وەرگرتنی پێناسەکانی کوالێتی کە لە لایەن زاناکانەوە دانراوە. دووەم: فێر بوونی قوناغی خوێندکار بە بنەما و پرەنسیپەکانی کوالێتی کۆنترۆل و کوالێتی ئەشیورانس و جیاوازیان لە دامەزراوە پیشەسازی و بازرگانی و خزمەتگوزاریەکاندا ، هەروەها سیستەمی بەڕێوەبردنی کوالێتی و ئامانجەکانی کوالێتی و سیاسەتی کوالێتی لە خۆوە دەگرێت . بابەتی چۆنیەتی پێشخستنی کوالێتی مەواد و بەرهەمەکان و خەسڵەتە پێوانەیی کوالێتی و ڕێنیشاندەری کوالێتی لە دامەزراوەکاندا دەخوێندرێتز سێیەم: فێر بوونی قوناغی خوێندکار بە ستاتیکی کوالێتی کۆنترۆل و شیکار کردنی نمونەکانی ئیکس بارو ئار بار ، بە مەبەستی کۆنترۆل کردنی باری خراپی و مەوادو بەرهەمە پیشەسازییەکان و ڕاستکردنەوەیان.
Student's obligation	During this semester, the student must fulfil the following obligations: First: Attending lectures in the hall. Second: Share discussions about lecture topics in the class. Third: The student must do the following: ✓ Respect for the teaching staff, students and other employees. ✓ Implementation of health, safety, and environmental protection instructions ✓ Maintaining college property. ✓ Respect the instructions issued by the scientific department and the college. ✓ Conducting monthly and final examinations according to the instructions. Fourth: Accomplishment of the following components during this semester: • Homework / 2 • Report / 1 • Seminar / 1 • Quiz/ 2 • Attending a scientific visit to the manufacturing or services firms.
Required Learning Materials	Required learning materials are consist of the lectures, discussions, quizzes, examinations, visiting to industrial and services firms, presenting

	video films about quality control of materials and manufactured products, and in commercial and services enterprises.				
Evaluation	**Task**		**Weight (Marks)**	**Due Week**	**Relevant Learning Outcome**
	Paper Review				
	Assignments	Homework	10%	6 & 9	
		Class Activity	2%		
		Report	8%	4	
		Seminar	8%	10	
		Essay			
		Project			
	Quiz		8%	5& 9	
	Lab.				
	Midterm Exam		24%		
	Final Exam		40%		
	Total		100%		
Specific learning outcome:	ئامانجە سەرەکییەکانی ئەم کۆرسە یان ئەم وانەیە بریتیە لە فێر کردنی قوتابی خوێنکار بۆ ئەوەی بتوانێت لە دامەزراوە پیشەسازی و بازرگانی و خزمەتگوزارییەکاندا بابەتی کوالیتی مەواد و بەرهەمەکان پێش بخات و هەوڵی ئاست بەرزیان بدات و کۆنترۆلی کەموکوڕییەکان بکات.				
Course References:	Marcel Proust, Quality and Reliability Methods, JMP, ISBN 978-1-61290-199-2, 2012, 424 Pages. Douglas, C. Montgomery, Introduction to Statistical Quality Control, ISBN 978-0-470-16992-6, 2009, 735 Pages. Paul F. Koza, et. al., ISO 9001:2015, Quality Manual, 2018, 121 Pages. Dale H. Besterfield, et. al., Total Quality Management, ISBN 9788131764961, 2012, 453 Pages. Myer Kutz, et. al., Mechanical Engineers 'Handbook, Design, Instrumentation, and Controls, ISBN 978-1-118-93080-9, 2014, 955 Pages.				

Course topics (Theory)	**Week**	**Learning Outcome**
Quality	1	
Quality Control, Quality assurance	2	

Quality topics in industrial, commercial, and serviced enterprises	3	
Quality manual	4	
Measurable and non-measurable quality characteristics	5	
ISO 9000, ISO 9001, International standards, national standards	6	
statistical quality control SCQ	7	
X-bar- R charts -1	8	
X-bar- R charts -2	9	
Control of the process	10	
Control chart by using counts- 1	11	
Control chart by using counts- 2	12	
Practical Topics	**Week**	**Learning Outcome**

Questions Example Design:

Question 1, (Quality), (12 + 13 degrees):

A- Complete the following definitions:
[1]: Quality is Conformance to ……..
[2]: Quality is Satisfaction of ……..

B- Quality characteristics consist of two types: measurable and non-measurable. Here:
[1]: Name three examples of measurable quality characteristics.
[2]: Name three examples of non-measurable quality characteristics.

Question 2, (Quality manual & quality inspection), (20 + 13 degrees):

A- there are 20 contents of a typical quality manual. Write them (20 degrees)

B- The inspection of products is one element production planning and control PPC, the following figure shows the inspection process of diameter of manufactured steel pipes in an industry factory. Write about the inspection of this material.


The figures show the inspection process of diameter of manufactured steel pipes in an industry factory

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Question 3, (Quality), (9 + 6 degrees):

A- Quality has many definitions based on scientists and related organizations. Here, complete the following definitions:
[1]: Quality is Conformance to ……..
[2]: Quality is Satisfaction of ……..
[3]: Quality is Fitness for use at …….

B- Quality characteristics consist of two types: measurable and non-measurable. Here:
[1]: Name three examples of measurable quality characteristics.
[2]: Name three examples of non-measurable quality characteristics.

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Question 4, (Control chart), (27 degrees):

An example of X-bar- R charts:
The following collection of data represents samples of the amount of forces applied in a pressure process for a product assembly in a production enterprise. Determine if the process is in control by calculating the appropriate upper and lower control limits of the X-bar and R charts.

Sample	Obs 1	Obs 2	Obs 3	Obs 4	Obs 5
1	10.68	10.689	10.776	10.798	10.714
2	10.79	10.86	10.601	10.746	10.779
3	10.78	10.667	10.838	10.785	10.723
4	10.59	10.727	10.812	10.775	10.73
5	10.69	10.708	10.79	10.758	10.671
6	10.75	10.714	10.738	10.719	10.606
7	10.79	10.713	10.689	10.877	10.603
8	10.74	10.779	10.11	10.737	10.75
9	10.77	10.773	10.641	10.644	10.725
10	10.72	10.671	10.708	10.85	10.712
11	10.79	10.821	10.764	10.658	10.708
12	10.62	10.802	10.818	10.872	10.727
13	10.66	10.822	10.893	10.544	10.75
14	10.81	10.749	10.859	10.801	10.701
15	10.66	10.681	10.644	10.747	10.728

And the tabled values are as indicated in following table:

n	A2	D3	D4
2	1.88	0	3.27
3	1.02	0	2.57
4	0.73	0	2.28
5	0.58	0	2.11
6	0.48	0	2.00
7	0.42	0.08	1.92
8	0.37	0.14	1.86
9	0.34	0.18	1.82
10	0.31	0.22	1.78
11	0.29	0.26	1.74

Extra notes:

External Evaluator:

After reading this Module (Course syllabus) catalogue
2022-2023, it is suitable and perfect for teaching in mechanical engineering colleges.
Best regards

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