



Module (Course Syllabus) Catalogue 2023-2024

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| College/ Institute | Erbil Technical Engineering College | |
| Department | Mechanical and Energy Engineering | |
| Module Name | Quality Control | |
| Module Code | QUC 804 | |
| Degree | Bachelor | <input type="checkbox"/> * |
| Semester | Second Semester | <input type="checkbox"/> * |
| Qualification | PhD | |
| Scientific Title | Assistant Professor | |
| ECTS (Credits) | 4 | |
| Module type | Prerequisite <input type="checkbox"/> * | Core <input type="checkbox"/> |
| Weekly hours | 2 | |
| Weekly hours (Theory) | (2) hours class | (27) Total hours workload |
| Weekly hours (Practical) | () hr Class | () Total hrs workload |
| 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

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| <p>Course Description</p> | <p>This course consists of two main parts study in a one year of two courses at the technical engineering college.</p> <p>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.</p> <p>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.</p> |
| <p>Course objectives</p> | <p>نهم کورسه یان نهم وانه یه نهم په ییامه گرنگانده ی خواره وه دبهه خشیت:</p> <p>یه که م: فیبر بوونی قونابی خویندکار به بنه ما و پر نسیپه کانی کوائیتی به شیوه یه کی گشتی و ودرگرتنی پیناسه کانی کوائیتی که له لایه ن زاناکانه وه دانراوه.</p> <p>دوووم: فیبر بوونی قونابی خویندکار به بنه ما و پر نسیپه کانی کوائیتی کونترول و کوائیتی نه شیورانس و جیوازیان له دامه زراوه پیشه سازی و بازرگانی و خزمه تگوزاریه کاندای ههروه ها سیستمی به ریوه بردنی کوائیتی و ناما نجه کانی کوائیتی و سیاسه تی کوائیتی له خووه ده گرتی . بابه تی چونه تی پیشخستنی کوائیتی مهواد و به ره مه کان و خه سه ته پیوانه یی کوائیتی و رینیشاندیری کوائیتی له دامه زراوه کاندای ده خویندریتز</p> <p>سییه م: فیبر بوونی قونابی خویندکار به ستاتیکی کوائیتی کونترول و شیکار کردنی نمونه کانی نیکس بارو نار بار ، به مه بهستی کونترول کردنی باری خراپی و مهوادو به ره مه پیشه سازیه کان و راستگردنه وه یان.</p> |
| <p>Student's obligation</p> | <p>During this semester, the student must fulfil the following obligations:</p> <p>First: Attending lectures in the hall.</p> <p>Second: Share discussions about lecture topics in the class.</p> <p>Third: The student must do the following:</p> <ul style="list-style-type: none"> ✓ 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. <p>Fourth: Accomplishment of the following components during this semester:</p> <ul style="list-style-type: none"> • Homework / 2 • Report / 1 • Seminar / 1 • Quiz/ 2 • Attending a scientific visit to the manufacturing or services firms. |
| <p>Required Learning Materials</p> | <p>Required learning materials are consist of the lectures, discussions, quizzes, examinations, visiting to industrial and services firms, presenting</p> |

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| | 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: | <p>ناما نجه سهره کييه کانی نهم کورسه يان نهم وانه يه بریتيه له فير کردنی قوتابی خوینکار بو نهودی بتوانیت له دامه زراوه پیشه سازی و بازرگانی و خزمه تگوزارییه کاندایا بابه تی کوانیتی مهواد و بهره مهکان پیش بخات و ههولی ناست بهرزیان بدات و کونترولی که موکورییه کان بکات.</p> | | | | |
| Course References: | <p>Marcel Proust, Quality and Reliability Methods, JMP, ISBN 978-1-61290-199-2, 2012, 424 Pages.</p> <p>Douglas, C. Montgomery, Introduction to Statistical Quality Control, ISBN 978-0-470-16992-6, 2009, 735 Pages.</p> <p>Paul F. Koza, et. al., ISO 9001:2015, Quality Manual, 2018, 121 Pages.</p> <p>Dale H. Besterfield, et. al., Total Quality Management, ISBN 9788131764961, 2012, 453 Pages.</p> <p>Myer Kutz, et. al., Mechanical Engineers 'Handbook, Design, Instrumentation, and Controls, ISBN 978-1-118-93080-9, 2014, 955 Pages.</p> | | | | |
| Course topics (Theory) | | | Week | Learning Outcome | |
| Quality | | | 1 | | |
| Quality Control, Quality assurance | | | 2 | | |

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|--|-------------|-------------------------|
| 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
2023-2024, it is suitable and perfect for teaching in mechanical engineering colleges.
Best regards



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