SUBJECT DATASHEET

QUALITY MANAGEMENT METHODS (SPC)

BMEGT20MN34

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name
QUALITY MANAGEMENT METHODS (SPC)

ID (subject code) BMEGT20MN34

Type of subject
contact lessons

Course types and lessons

Type	*Lessons*
Lecture	2
Practice	0
Laboratory	0

Type of assessment
term grade

Number of credits
3

Subject Coordinator

Name	*Position*	*Contact details*
Erdei János	senior lecturer	erdei.janos@gtk.bme.hu

Educational organisational unit for the subject
Department of Management and Business Economics

Subject website
https://edu.gtk.bme.hu

Language of the subject
magyar - HU; angol - ENG

Curricular role of the subject, recommended number of terms
Programme: **Management and Leadership MSc (in English) from 2019/20/Term 1**
Subject Role: **Compulsory elective**
Recommended semester: **0**

Programme: **Master's programme in Management and Leadership from 2019/20/Term 1 (Autumn term start)**
Subject Role: **Compulsory elective**
Recommended semester: **0**

Programme: **Master's programme in Management and Leadership from 2020/21/Term 2 (Spring term start)**
Subject Role: **Compulsory elective**
Recommended semester: **0**

Programme: **Engineering Manager Msc - Management specialisation for students starting from 2016/17/Term 1**
Subject Role: **Elective for the specialisation**
Recommended semester: **0**

Programme: **Management compulsory elective block**
Subject Role: **Compulsory elective**
Recommended semester: **0**

Programme: **Engineering Manager Msc - Management specialisation**
Subject Role: **Elective for the specialisation**
Recommended semester: **0**

Direct prerequisites

Strong	None
Weak	None
Parallel	None
Exclusion	None

Validity of the Subject Description
Approved by the Faculty Board of Faculty of Economic and Social Sciences, Decree No: 581046/15/2021. Valid from: 24.11.2021.

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

The basic objective of the course is to acquaint the audience with the most important methods and analysis techniques used for the efficient operation of quality systems and the quality regulation of production / service processes. By fulfilling the subject, students learn the essence, theoretical foundations and methods of quality and regulation analyzes; the structure and operation of the SPC systems, the types of control cards, the possibilities of their application; the principles and methods of acceptance quality control. An important goal of the subject is to provide students with sufficient skills in practical application in addition to the theoretical foundations.

Academic results

Knowledge

1. Know the place and role of quality control in quality management systems.
2. Know the conceptual system of quality control, the concept of quality capability and statistical control.
3. Get acquainted with statistical and other methods that can be used in quality control.

Skills

1. Are able to apply the learned theoretical and methodological knowledge in practice.
2. Are able to doubt, think in alternatives and integrate knowledge.
3. Will be able to professionally participate in solving quality management problems, preparing and / or making such decisions

Attitude

1. Will seek collaboration in multidisciplinary teamwork.
2. Apply the tool of the quality management technique in a form that provides the best chance for successful process control, understanding the quality level of the process.

Independence and responsibility

1. Perform independent tasks in the analysis of quality management problems.
2. Independently perform tasks in the preparation and / or making of quality management decisions.
3. Take responsibility for quality management decisions.

Teaching methodology

Lectures, occasional solving of practical tasks to be done individually or in small groups.

Materials supporting learning

- Erdei J. Minőségmenedzsment módszerek, oktatási segédanyag, BME GTK, 2018
- Kemény S.: Statisztikai minőség- (megfelelőség-) szabályozás, Műszaki Könyvkiadó - Magyar Minőség Társaság, Budapest, 1999

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

The assessment of the learning outcomes formulated in point 2.2 is going to result in a term grade.

Performance assessment methods

Detailed description of the performance evaluations carried out during the term: Solving the assigned tasks during practical classes. The lecturer can give extra points for active class participation. At the end of the term period, a 60-minute midterm on the topics has to be fulfilled. The midterm consists of essay ques-tions and test questions.

Percentage of performance assessments, conducted during the study period, within the rating

- **midterm**: 66,7%
- **practices** : 33,3%
- **total**: 100% +

Percentage of exam elements within the rating

Conditions for obtaining a signature, validity of the signature

Issuing grades

Excellent	95-100
Very good	88– 94
Good	76– 87
Satisfactory	64 – 75
Pass	50 – 63
Fail	0-49

Retake and late completion

Due to their nature, the practices cannot be retaken. According to the Code of Study, the best 2/3 of these exercises from the student's point of view is added to the final result. The midterm at the end of the semester can be retaken in accordance with the regulations of the Code of Study.

Coursework required for the completion of the subject

participation in contact hours	12×2= 24
preparation for the lectures	12
preparation for the midterm	54
total	90

Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 04.10.2021.

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

To achieve the learning outcomes set out in section 2.2, the course consists of the following areas and topics.

1 Introduction, semester structure and requirements. Development of quality management systems, the role of quality control in quality management systems. Basic concepts of probability calculus and statistics.

2 Basics of SPC: basic concepts, capability, concept of control. Structure of SPC systems. Solving a practical task.

3 Capability analysis: types and methods of capability analysis, interpretation of quality capability indices.

4 Capability analysis on Gaussian paper, solving a practical problem.

5 measurement system capability analysis: the essence of measurement system capability analysis, characteristics of measurement system

6 Methods of analysing measurement systems, evaluation of measurement systems based on practical examples.

7 Practical tasks.

8 Statistical control with the help of control charts: introduction to the application of control charts, logical course of control, advantages, principles of defining boundaries.

9 Kártyák határainak számolása, első és másodfajú hiba nagysága, minősítéses és méréses ellenőrzőkártyák példáján, OC-görbe értelmezése.

10 Calculating the limits of the charts, the magnitude of the first and second type of error, various control charts, the interpretation of the OC curve.

11 Special control charts: CUSUM chart, zone-chart, practical tasks.

12 Control charts on attributes Principles of acceptance quality control, sampling acceptance control design logic, OC curve, ASN, one-step, two-step sampling plan.

Additional lecturers

Dr. Szádeczky Tamás egyetemi docens szadeczky.tamas@gtk.bme.hu

Approval and validity of subject requirements