



SUBJECT DATASHEET

ORGANIZATION OF PRODUCTION

BMEGT20MN02

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name

ORGANIZATION OF PRODUCTION

ID (subject code)

BMEGT20MN02

Type of subject

Contact lessons

Course types and lessons

<i>Type</i>	<i>Lessons</i>
Lecture	4
Practice	0
Laboratory	0

Type of assessment

term grade

Number of credits

5

Subject Coordinator

Name *Position* *Contact details*

Dr. Koltai Tamás professor koltai.tamas@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

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: 5881478/13/2024 registration number. Valid from: 11.12.2024.

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

The subject introduces students to the methods of efficient operation of production and service systems and the philosophies and methodologies related to the organizational function of managing core processes. It presents the pull implementation of material flow systems along with learning about the philosophy and tools of lean management. The effects of the random nature of value-creating processes are illustrated by the managerial application of queuing theory dealing with temporary capacity problems, customer waiting, and their investigation in service systems. In the organizational function of management, the questions of task management and follow-up, which are receiving a lot of attention these days, are given by examining the problems and solution possibilities of task and process scheduling. The goal is to understand the advantages and disadvantages of the type of production and service system, depending on the nature of the product or service, the market environment, and the economic conditions.

Academic results

Knowledge

1. Knows the basic definitions and concepts of operations management.
2. Knows abstract mathematical modelling related to examined problems.
3. Understands of the relation between general corporate operations management.
4. Overviews the processes of the related fields and the methodology available to solve the related problems.
5. Has confident methodological knowledge to solve problems arising in various areas of production management, understands the application possibilities of theoretical models and the potential opportunities inherent in quantitative analyses.

Skills

1. Capability of integrating the theoretical background and the practical tool of operation processes, and communication skill to explain the results for all the participants of implementation coming from different professional fields.
2. Capability of the application of basic terminologies of operations and management, and a systematic and rigorous application of the technical language of the related professions.
3. An ability to interpret, evaluate and use data related to production processes when performing planning and analysis calculations

Attitude

1. An understanding and acceptance, that quantitative methods can support operation planning and improvement decisions.
2. An open-minded approach of all kinds of innovations of the related area, and a critical approach when implementation must be performed.
3. An ability to present and defend propositions, and a critical and integrative approach of comments from other professional areas.
4. An overall system oriented approach in the area of operations management.

Independence and responsibility

1. An ability to solve and manage complex problems in a work organization, in accordance with the current standards and requirements.
2. An ability to perform task and report in the corporate hierarchy.
3. Independent, supportive and open-minded approach towards all kinds of inter-organizational and environmental cooperation.

Teaching methodology

Lectures, analysis of theoretical models, numerical exercises, analysis of case studies individually or in teams.

Materials supporting learning

- Kalló N., Koltai T.: Termelés-szervezés, oktatási segédlet
- Kalló, N., Koltai T.: Production and Operations Management, lecture notes
- Koltai T., A termelés-menedzsment alapjai II. Műegyetemi Kiadó, Budapest, 2003.
- Waters, D.: Operations Management: Producing Goods and Services, Harlow: Addison Wesley, 2003.
- Nahmias, S., Olsen, T.L.: Production and Operations Analysis. Irwin, 2015.

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

Assessment of the learning outcomes described under point 2.2. is based on three midterms.

Performance assessment methods

The performance assessment in the subject is evaluated along three midterms. At the end of each of the 3 topics covered by the subject, a midterm (partial performance evaluation) will be written, in which the knowledge of the theoretical material of the given topic and the practical application will be checked. In order to successfully complete the subject, a result of at least 40% must be achieved on each midterm, and a total of 50% of the points that can be obtained during the semester is required.

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

- 1st midterm: 35
- 2nd midterm: 35
- 3rd midterm: 30
- Total: 100

Percentage of exam elements within the rating

Conditions for obtaining a signature, validity of the signature

Issuing grades

Excellent	96
Very good	91-95
Good	81-90
Satisfactory	66-80
Pass	50-65
Fail	0-49

Retake and late completion

Based on the Code of Studies

Coursework required for the completion of the subject

participation in contact hours	56
preparation for contact hours	14
preparation for the midterm test	80
total	150

Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by the Vice Dean for Education, valid from: 04.11.2024.

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

The subject introduces students to the organizational challenges of production and service systems and their tools. During the lectures and practices, special emphasis is placed on getting to know the philosophy and tools of lean management; examination of the characteristics, process organization, and capacity problems of service systems; the challenges of monitoring and scheduling problems of processes and tasks.

- 1 Introduction. Overview of the tasks of production organization. Conceptual description of the factors that currently influence the tasks of the field and the responses to the challenges.
- 2 Lean management approach and tools. The Toyota Production System and the philosophy of lean management. The theoretical background and approach of lean operation (loss reduction, JIT and jidoka). The concept of a lean organization. Lean management in the field of services. Lean management tools and their application.
- 3 Examination of service systems and their capacity problems. Characteristics and management problems of service systems. Customer waiting and queuing systems are their basic elements. Classification of queuing models. Basic relationships. Queuing in case of priority rules. Conditions and limitations for the use of models.
- 4 Possibilities for monitoring and scheduling processes and tasks. Basic concepts of production scheduling. Consideration of management priorities when selecting scheduling rules. Scheduling rules for a single resource or resources working in parallel. Scheduling in complex (flow-shop, job-shop) systems. Aspects and methods of balancing production lines.

Additional lecturers

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Approval and validity of subject requirements