SUBJECT DATASHEET

PRODUCTION AND OPERATIONS MANAGEMENT

BMEGT20M013

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name
PRODUCTION AND OPERATIONS MANAGEMENT

ID (subject code) BMEGT20M013

Type of subject
contact lessons

Course types and lessons

Type	*Lessons*
Lecture	4
Practice	0
Laboratory	0

Type of assessment
exam 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: 581046/15/2021. Valid from: 24.11.2021.

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

The aim of the course is to introduce the basic characteristics of production and service processes, as well as the most important methods necessary for the planning and the efficient implementation of tasks in production and service systems. Students learn the methods and issues of such important tasks as demand forecasting, capacity analysis, inventory control and aggregate pro-duction planning. Besides the theoretical background, the course provides case studies to emphasize the practical issues as well. The objective of the course is to show, that quantitative information related to production and operation systems can help to determine the optimal operation of the system, and the analysis of deviation from optimal operations may provide insight to operation improvements.

Academic results

Knowledge

1. Basic definitions and concepts of production and operations management.
2. Abstract mathematical modelling knowledge related to production and operations problems.
3. Understanding of the relation between general corporate operations and production management.
4. An overview of the processes of the related fields and the methodology available to solve the related problems.
5. An understanding of the available theoretical models and the application of these models based on advanced quan-titative tools.

Skills

1. Capability of integrating the theoretical background and the practical tool of production and 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 production and operations management, and a systematic and rigorous application of the technical language of the related professions.
3. An ability of use quantitative methods to process and analyse data for planning and evaluation purposes.

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 implemen-tation 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 production and 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

- Koltai T., Kalló, N., Tamás, A.: Production and Operations Management (Lecture notes)
- További segédanyagok az előadó által/Supplementary material provided by the lecturer
- Koltai T.: Termelésmenedzsment, Typotex, 2009.
- Waters D.: Operations Management: Producing Goods and Services, Harlow: Addison Wesley, 2003

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

Assessment of the learning outcomes described under point 2.2. is based on a written final exam.

Performance assessment methods

A. Detailed description of the performance evaluations carried out during the term: 1 writing one midterm test and achieving at least 50% is the requirement for the signature. B. Assessment of the exam: A written exam must be passed: all the theoretical problems and practical applications discussed during the course must be known. A maximum of 100 points can be received for the successful solution
of the exam problems and for the related theoretical questions

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

Percentage of exam elements within the rating

Conditions for obtaining a signature, validity of the signature

A midterm test must be successfully completed in order to be eligible for the final exam. A midterm test is successfully completed if the result is above 50 per cent. The objective of the midterm test is to check how the theoretical background and basic problems are understood by the students. The midterm exam is organized on one of the official scheduled classes. The result of the midterm test is not part of the result of the final assessment. Retake requirements of the midterm test can be found in the Code of Studies of the university (114 §).

Issuing grades

Excellent	95
Very good	90-94
Good	80-89
Satisfactory	65-79
Pass	50-64
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	48
preparation for contact hours	12
preparation for the midterm test	20
preparation for the exam	70
total	150

Approval and validity of subject requirements

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

III. COURSE CURRICULUM

THEMATIC UNITS AND FURTHER DETAILS

Topics covered during the term

The learning outcomes of 2.2 can be achieved by studying the following areas and topics

1 Introduction. Classification of forecasting methods. Moving average, exponential smoothing.

2 Forecasting demand with trend and seasonality. Application of the Winters model. Causal forecasting methods. Forecasting with linear regression. Evaluation of forecasting error. Tracking signal.

3 Restaurant case study. Calculations.

4 Context of capacity calculation. Short-term capacity analysis. Change in capacity over time. The impact of learning curve.

5 Analysis of long-term decisions on capacity. Capacity analysis with decision tree. Sensitivity analysis. Case study. Calculations.

6 Inventory management concepts. Inventory systems and their costs. Continuous and periodic review systems. Economic order quantity model (EOQ).

7 Economic order quantity with continuous replenishment. Sensitivity analysis. Calculation of reorder quantity.

8 Quantity-related discounts. Calculation of order quantity in case of proportional and incremental discounts.

9 Uncertainty of the inventory system. Safety stock calculation. Practical application of inventory models and com- puter support. Make or buy case study.

10 Aggregate production planning. Production planning strategies. Mathematical models of production planning.

11 The use of linear programming for production planning. Sensitivity analysis. Case study. Calculations.

12 Summary. Problem solving exercises.

Additional lecturers

Dr. Kalló Noémi	associate professor	kallo.noemi@gtk.bme.hu
Kelemen Tamás	senior lecture	kelement.tamas@gtk.bme.hu
Dr. Sebestyén Zoltán	associate professor	sebestyen.zoltan@gtk.bme.hu
Tamás Alexandra	assistant lecture	tamas.alexandra@gtk.bme.hu

Approval and validity of subject requirements