



# **SUBJECT DATASHEET**

## **PRODUCTION AND OPERATIONS MANAGEMENT**

### **BMEGT20M430**

# I. SUBJECT DESCRIPTION

## 1. SUBJECT DATA

### Subject name

PRODUCTION AND OPERATIONS MANAGEMENT

### ID (subject code)

BMEGT20M430

### Type of subject

contact lessons

### Course types and lessons

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

### Type of assessment

exam grade

### Number of credits

4

### 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

magyart - HU

### 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 Economic and Social Science (29.05.2019) with the 9th decision on the 580.448/2/2019 registration number that is valid from 29.05.2019.

## 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 production 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 quantitative 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 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 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 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

- written exam: 100%
- total: 100%

#### Conditions for obtaining a signature, validity of the signature

#### Issuing grades

Excellent	95
Very good	90-95
Good	80-90
Satisfactory	65-80
Pass	50-65
Fail	50

#### Retake and late completion

Based on the Code of Studies.

#### Coursework required for the completion of the subject

participation in contact hours	$12 \times 4 = 48$
preparation for contact hours	$12 \times 1 = 12$
preparation for the exam	90
total	150

#### Approval and validity of subject requirements

Consulted with the Faculty Student Representative Committee, approved by Emma Lógó, PhD, Vice Dean for Education

# 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 Kereslet előrejelzése trendekkel, szezonalitással. A Winters-modell alkalmazása. OK-okozati előrejelzési módszerek. Lineáris regresszióval való előrejelzés. Előrejelzési hiba értékelése. Nyomonkövetés.
- 3 Forecasting demand with trend and seasonality. Application of the Winters model. Causal forecasting methods.
- 4 Forecasting with linear regression. Evaluation of forecasting error. Tracking signal.
- 5 Restaurant case study. Calculations.
- 6 Készletmenedzselési koncepciók. Készletrendszerek és költségeik. Folyamatos és periodikus felülvizsgálati rendszerek. EOQ modell.
- 7 Context of capacity calculation. Short-term capacity analysis. Change in capacity over time. The impact of learning curve.
- 8
- 9 Analysis of long-term decisions on capacity. Capacity analysis with decision tree. Sensitivity analysis. Case study.
- 10 Calculations.
- 11 Inventory management concepts. Inventory systems and their costs. Continuous and periodic review systems.
- 12 Economic order quantity model (EOQ).

### Additional lecturers

Dr. Kalló Noémi	egyetemi docens	kallo.noemi@gtk.bme.hu
Kelemen Tamás	mesteroktató	kelement.tamas@gtk.bme.hu
Dr. Sebestyén Zoltán	egyetemi docens	sebestyen.zoltan@gtk.bme.hu
Tamás Alexandra	egyetemi tanársegéd	tamas.alexandra@gtk.bme.hu

### Approval and validity of subject requirements

Part I-III of the Subject Form is to be approved by the Head of Department of Management and Business Economics named under 1.8.