SUBJECT DATASHEET

TECHNOLOGY MANAGEMENT

BMEGT20MN11

I. SUBJECT DESCRIPTION

1. SUBJECT DATA

Subject name
TECHNOLOGY MANAGEMENT

ID (subject code)	BMEGT20MN11

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. Danyi Pál	associate professor	danyi.pal@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: **MSc in Engineering Management**
Subject Role: **Compulsory**
Recommended semester: **0**

Programme: **MSc in Management and Leadership**
Subject Role: **Compulsory**
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: 5881478/13/2024 registration number. Valid from: 11.12.2024.

2. OBJECTIVES AND LEARNING OUTCOMES

Objectives

The aim of the course is to: - present that technology is fundamental in the business competitiveness; - help to the deep understanding of the competitive nature of technology; - present some proven methods in technology management.

Academic results

Knowledge

1. Will be aware of the competitive nateure of technology.
2. Will understand the role of technology in the succesful operation of organizations.
3. Will know some proven methods of technology management.

Skills

1. Will be able to follow and understand the literature of the technology management.
2. Will be able to professionally communicate about technology management.
3. Will be able to work as an employee who understands the business, economical, management and technology contexts.
4. Will be able to work as a manager who can make decisions with synthesizing the business, economical, management and technology contexts.

Attitude

1. Are open to innovation, to follow constantly the technological development, and take part in development or in business implementation of the technological development.
2. Are open to accept the new development in technology management.
3. Strive to cooperate in multidisciplinary groupwork.

Independence and responsibility

1. Perform tasks independently in analysing technology management problems.
2. Perform tasks in supporting and making decisions on the filed of technology management.
3. Take the responsibility for the decisions he/she made in the field of technology management.

Teaching methodology

Lectures.

Materials supporting learning

- Pataki B.: Technológiamenedzsment (letölthető MSc oktatási segédlet, BME GTK MVT, 2018)

II. SUBJECT REQUIREMENTS

TESTING AND ASSESSMENT OF LEARNING PERFORMANCE

General Rules

The assessment of the learning outcomes formulated in point 2.2

Performance assessment methods

Detailed description of the performance evaluation carried out during the term: The condition for the signature is to give in a homework assignment. The task is a concise presentation of an article on technology management (1 piece) in English or Hungarian, the expected scope of which, together with spaces, is approx. 2500-3000 characters. Detailed description of the performance evaluation carreid out during the exam period: 60 minutes 100 points written exam Exam parts: Various tasks - short essay questions, multiple choice questions, etc. - from the parts of the curriculum selected in the subject description.

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

The condition for the signature is to give in a homework assignment. The task is a concise presentation of an article on technology management (1 piece) in English or Hungarian, the expected scope of which, together with spaces, is approx. 2500-3000 characters.

Issuing grades

Excellent	95
Very good	89–94
Good	76–88
Satisfactory	63–75
Pass	50–62
Fail	0-49

Retake and late completion

According to the actual Code of Studies.

Coursework required for the completion of the subject

participation on contact hours	48
contiuous learning	12
preparation for the exam	90
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

In order to achieve the learning outcomes set out in 2.2., the subject consists of the following thematic blocks.

1 The requirements of the subject, its flow, the prescribed curriculum. Technology, science, technology concept and relationship. Technology typologies.

2 The concept of technology management. The role of technology management, its areas of operation, its tasks in the organization, its relations with other areas.

3 Technological life cycles I. The concept and representation of the technological life cycle. Possible relationships of alternating life cycles. Refugee development. Dominance and subdominance of technologies, market and technology based differentiation.

4 Technological life cycles II. Characteristics of the 4 stages of the technological life cycle, their management.

5 Management misconceptions about new technologies. Factory life cycles.

6 Fundamentals of Innovation Management I. The concept of innovation, product, process, marketing and organizational innovation. Incremental and radical, sustaining and disruptive innovation. Opportunities for disruptive innovation.

7 Basics of innovation management II. Characteristics of innovative organizations. Varieties of open innovation, their application possibilities and conditions.

8 Basics of innovation management III. Stealth innovation. Innovation and imitation. Innovation type errors. The environment for innovation.

9 Product Innovation Management I. The process and stages of product development. Relay versus simultaneous / competing product development. Agile product development.

10 Product Innovation Management II. Technological, market and dual-drive product innovation. Product innovation in the service.

11 Product Innovation Management III. Incorrect and correct questioning of customer needs. Product proliferation. Quantifying the risks of product innovation.

12 Process innovation management. The process and steps of process technology change. Open process innovation.

13 IT Management I. Basic issues of IT strategy. The company's IT assets.

14 IT Management II. Big data. The Internet of Things: Opportunities, Impacts on Industries and the Functioning of Organizations.

15 IT Management III.. Enterprise applications of augmented reality. Organizational applications of artificial intelligence.

16 IT Management IV. (Presentation by Dr. Pál Danyi). Use of emerging ITs. Gartner's popularity curves (hype cycles) of the fuss around new ITs.

17 The development of agile development in IT and its spread in other industries. The formation of dev-ops in informatics and their spread in other industries. (Lecture by László Gyula)

18 Fundamentals of strategic technology management. The strategic importance of technology. Content, context and process of technostrategy. Technostrategic type errors.

19 Technology portfolio analysis. Pure technology portfolio models, mixed business technology portfolio models. Technostrategy planning based on technology portfolio analysis, coordination of business and technology strategy.

20 Technological road mapping. The concept and purpose of the technology roadmap. Structure of the technological roadmap, analyzes to be performed in each lane. Corporate customization of technology road mapping and organizational conditions for its application.

21 Technology needs management and development project portfolio management. (Presentation by Dr. Pál Danyi)

22 Audit methods in technology management: their types, structure, application.

23 Strategic management of corporate energy. Steps to raise to strategic level. Characteristics of the energy cutting edge, self-assessment.

24 Core competency management. Criteria and technological bases of core competence. There are 4 levels of core competency-based competition. Areas, tasks and dangers of neglecting the management of core competencies.

Additional lecturers

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Approval and validity of subject requirements