BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS
FACULTY OF MECHANICAL ENGINEERING

SUBJECT DATASHEET

I. SUBJECT DESCRIPTION

1. GENERAL DATA

1.1. Subject name (in Hungarian, in English)

Manufacturing ● Manufacturing

1.2. Neptun code

BMEGEGTAPL2

1.3. Type

study unit with contact hours

1.4. Course types and number of hours (weekly / semester)

course type	number of hours (weekly)	nature (connected / stand-alone)
lecture (theory)	2	-
exercise	2	individual
laboratory exercise	-	-

1.5. Type of assessments (quality evaluation)

exam

1.6. ECTS

4

1.7. Subject coordinator

name:	Dr. Biró István
post:	adjunct
contact:	biro.istvan@gpk.bme.hu

1.8. Host organization

Department of Manufacturing Science and Engineering (https://manuf.bme.hu)

1.9. Course homepage

https://manuf.bme.hu/?page_id=11203

1.10. Course language

hungarian

1.11. Primary curriculum type

optional

1.12. Direct prerequisites

Strong prerequisite:	-
Weak prerequisite:	-
Parallel prerequisite:	-
Milestone prerequisite:	-
Excluding condition:	BMEGEGTAPL1

(the subject cannot be taken if you have previously completed any of the following subjects or groups of subjects)

2. AIMS AND ACHIEVEMENTS

2.1. Aim

The subject familiarizes the students with the basic concepts and basic information of component production and assembly, the basic production processes, their production tools, equipment and control. Using the production example of simple parts, it presents the steps of production planning, the methods of maintaining production quality, and questions of economy. By describing the development trend of machine manufacturing technology, it presents the most modern production processes, production structures, and addresses issues of integration.

2.2. Learning outcomes

Competences that can be acquired by completing the course:

A. Knowledge

- The student knows the basic concepts and basic information of component production and assembly.
- The student understands the construction, operation, and proper use of production equipment.
- The student knows the characteristic relationships between the motion conditions of machining and the geometry of the part.
- The student understands the role of production equipment and aspects of its design.
- The student has the basic concepts of manufacturability and assembly.
- The student knows the tasks and sequence of production planning.
- The student defines the most important features and steps of computer-aided production planning methods.
- The student distinguishes the role of estimated cost and standard time data in production planning.
- The student systematizes the integration solutions of production systems and the role of hybrid processes.
- The student explains the methods of determining the force and heat effects that occur, the basic models, and the relationships.

B. Ability

- The student is able to select production processes based on the geometry to be produced and technological requirements.
- The student defines the settings to be used during machining.
- The student interprets machining machine programs, parameters, and comments.
- The student uses the basic specifications and requirements necessary for production planning.
- The student is able to perform basic assembly dimension chain analysis tasks and build assembly dimension chain.
- The student selects the specifications for the establishment of inspections and quality assurance.
- The student reveals emerging problems based on the operating principles of production processes.
- The student interprets the production plan and the specifications defined therein.
- The student is able to operate and manage the production process independently.
- It solves the selection of the right tool and settings.

C. Attitude

- During the expansion of knowledge, the student participates in problem-solving with the instructor and fellow students.
- The student expands his knowledge and broadens his horizons through continuous knowledge acquisition.
- The student strives for accurate and error-free task solutions.
- The student is open to the use of information technology tools.
- The student strives to implement the principles of economy and quality in the solution of production tasks.

D. Independence and responsibility

- The student independently thinks through production and assembly tasks and problems and solves them based on given resources.
- The student accepts well-founded critical comments and continues his work accordingly.
- In some situations - as part of a team - the student cooperates with their fellow students in carrying out the exercises.
- In their thinking, the student carries out his tasks using a systematic approach.
- The student accepts the aspects of sustainable development and environmental protection in their work.

2.3. Teaching methodology

Introduction of basic definitions, procedures, and relationships during lectures, presentation of basic production planning steps and parameter calculations in calculation and planning exercises, written and oral communication, use of IT tools and techniques, the most frequently used production procedures and measurement, learning about control methods.

2.4. Support materials

a) Textbooks

-

b) Lecture notes

Horváth-Markos: Gépgyártástechnológia, Műegyetemi Kiadó, 2005, Azonosító: 45018

c) Online materials

-

2.5. Validity of the course description

Start of validity:	2023. February 1.
End of validity:	2027. July 15.

II. SUBJECT REQUIREMENT

3. ACHIEVEMENT CONTROL AND EVALUATION

3.1 General rules

According to the subject requirement, performance evaluation is based on mid-semester performance and the exam. Mid-semester performance is a condition for being admitted to the exam, which means solving the tasks that arise during the exercises. During the evaluation of the midterm performance, we take into account the professional content of the task solutions, the soundness of the elaboration from a technical point of view, and the correctness of the conclusions drawn from the results.

3.2 Assessment methods

A. Detailed description of mid-term assessments

Mid-term assessment

type: summative assessment

count: 1

purpose, description: The purpose of the performance evaluation is to assess the quality of the midterm assignment solution. The tasks are formulated during the exercises, to solve which the students apply the professional knowledge acquired in the lectures and educational aids. Individual and group tasks are solved. The assignments focus on practical problem-solving (selection of production equipment, basic design of the production process, technological calculations).

B. Detailed description of assessments performed during the examination period (if relevant)

Elements of the exam:

1. written partial exam

obligation: mandatory (partial) exam unit, failing the unit results in fail (1) exam result

description: A complex, written evaluation of the knowledge and ability-type competence elements of the subject in the form of a closed paper. The thesis basically focuses on the application of the acquired knowledge, so it focuses on the recognition and solution of the problem, i.e. in addition to theoretical questions, practical (calculation) tasks must be solved during the performance evaluation. The part of the curriculum that forms the basis of the evaluation covers the theoretical knowledge presented in the lectures and the skills acquired in the exercises. The available working time is determined uniformly based on the list of tasks.

2. oral partial exam

obligation: does not apply

description:

3. practical partial exam

obligation: does not apply

description:

4. inclusion of mid-term results

obligation: (partial) exam unit chosen by the student, the exam result assessed by other partial exam unit can be changed restrictedly

description: The score of the summative performance evaluation is added one-to-one to the score of the exam that is passed on its own (that is, at least at a sufficient level on its own). The grade is determined based on the resulting total score. In the case of repeated exams, the score of the summative performance evaluation is calculated in the same way as the circumstances of the first exam (the score does not expire).

3.3 The weight of mid-term assessments in signing or in final grading

identifier	**weight**
Mid-term assessment	100 %

The condition for signing is that the score obtained in the mid-year assessments is at least **41%**.

3.4 The weight of partial exams in grade (if relevant)

type	**weight**
written partial exam	85 %
oral partial exam	0 %
practical partial exam	0 %
inclusion of mid-term results	15 %

3.5 Determination of the grade

grade ● [ECTS]	**the grade expressed in percents**
very good(5) ● Excellent [A]	above 92%
very good(5) ● Very Good [B]	85% .. 92%
good(4) ● Good [C]	71% .. 85%
satisfactory(3) ● Satisfactory [D]	56% .. 71%
sufficient(2) ● Pass [E]	41% .. 56%
insufficient(1) ● Fail [F]	below 41%

The lower limit specified for each grade already belongs to that grade.

3.6 Attendance and participation requirements

Must be present at at least **0%** (rounded down) of lectures.

At least **70%** the exercises (rounded down) must be actively attended.

3.7 Special rules for improving, retaken and replacement

The special rules for improving, retaken and replacement shall be interpreted and applied in conjunction with the general rules of the CoS (TVSZ).

Need mid-term assessment to individually complete?

yes

The way of retaking or improving a summary assessment for the first time:

each summative assessment can be retaken or improved

Is the retaking-improving of a summary assessment allowed, and if so, than which form:

retake or grade-improving exam possible for each assesment separately

Taking into account the previous result in case of improvement, retaken-improvement:

new result overrides previous result

3.8 Study work required to complete the course

Activity	**hours / semester**
participation in contact classes	56
mid-term preparation for practices	14
preparation for summary assessments	16
exam preparation	28
additional time required to complete the subject	5
summary	**119**

3.9. Validity of subject requirements

Start of validity: 2023. February 1.

End of validity: 2027. July 15.

4. ADDITIONAL INFORMATION

4.1 Primary course

The primary (main) course of the subject in which it is advertised and to which the competencies are related:

Mechanical engineering

4.2 Link to the purpose and (special) compensations of the Regulation KKK

This course aims to improve the following competencies defined in the Regulation KKK>

a) knowledge

- Student is familiar with the general and specific mathematical, scientific and social principles, rules, contexts and procedures needed to operate in the field of engineering.
- Student has the broad theoretical and practical knowledge, methodological and practical skills for the design, manufacture, modelling, operation and management of complex engineering systems and processes.
- Student has the comprehensive knowledge of global social and economic processes.

b) ability

- Student has the ability to apply the general and specific mathematical, scientific and social principles, rules, relationships and procedures acquired in solving problems in the field of engineering.
- Student has the ability to apply an integrated knowledge of machinery, mechanical equipment, systems and processes, materials and technologies for mechanical engineering, and related electronics and information technology.
- Student has the ability to deal with problems creatively, to solve complex problems in a flexible way, and to engage in lifelong learning and commitment to diversity and value-based approaches.

c) attitude

- Student is open and receptive to learning, embracing and authentically communicating professional, technological development and innovation in engineering.
- Student strives to improve student's own knowledge and that of student's colleagues through continuous self- and peer-learning.
- Student strives to meet and enforce quality standards.

d) independence and responsibility

- Student encourages student's colleagues and subordinates to act in a responsible and ethical manner.
- Student has the ability to work independently on engineering tasks.
- Student shares her acquired knowledge and experience through formal, non-formal and informal information transfer with those in her field.

4.3 Prerequisites for completing the course

Knowledge type competencies	
(a set of prior knowledge, the existence of which is not obligatory, but greatly facilitates the successful completion of the subject)	Basic knowledge of materials, machine components, and IT knowledge.
Ability type competencies	
(a set of prior abilities and skills, the existence of which is not obligatory, but greatly contributes to the successful completion of the subject)	Drawing and programming skills.