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 of energy equipment • Manufacturing of energy engineering equipment

1.2. Neptun code

BMEGEGTBV04

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)	1	-
exercise	-	-
laboratory exercise	1	individual

1.5. Type of assessments (quality evaluation)

mid-term grade

1.6. ECTS

3

1.7. Subject coordinator

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

1.8. Host organization

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

1.9. Course homepage

https://manuf.bme.hu/?page_id=517

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: BMEGEGTBG01, BMEGEGTBM01, BMEGEGTBT01

(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 acquaints students with the basic concepts and basic information of component production and assembly, the basic production procedures, production tools, equipment and control. It shows the steps of production planning, methods of maintaining production quality, and economic issues on the example of simple parts production. By presenting the development trend of mechanical engineering technology, he presents the most modern production processes and production structures and covers integration issues. As part of laboratory sessions, he provides direct experience of the operational tasks of production and the practical problems of manufacturability.

2.2. Learning outcomes

Competences that can be acquired by completing the course:

A. Knowledge

- Knows the basic concepts and basic information of part manufacturing and assembly.
- Understands the structure and operation of basic manufacturing equipment.
- Knows the characteristic relationships between the movements of machining and the geometry of the part.
- Understands the role of manufacturing tools and the aspects of their design.
- Possesses the basic concepts of manufacturability and assembly.
- Knows the tasks and sequence of production planning.
- Defines the most important features and steps of computer-aided production planning methods.
- Distinguishes the role of estimated cost and standard time data in production planning.
- Systematizes the integration solutions of production systems and the role of hybrid processes.
- Interprets the methods of determining the force and heat effects, the basic models and relationships.

B. Ability

- Able to select manufacturing processes based on the geometry and technological requirements of the part to be manufactured.
- Specifies the applicable settings of machining.
- Interprets machining programs, parameters, and comments.
- Uses the basic regulations and requirements necessary for production planning.
- Able to perform basic assembly scale analysis tasks, build assembly scale.
- Selects specifications to establish process controls and quality assurance.
- Explores problems that arise based on the operating principles of manufacturing processes.
- Interprets the production plan and the specifications determined in it.
- Able to operate and control a production process independently.
- Resolves the selection of the appropriate tool and settings.

C. Attitude

- Participates in problem-solving with fellow students as their knowledge expands under the supervision of the instructor.

- Continuously expands their knowledge and broadens their horizons through the acquisition of knowledge.
- Strives for an accurate and error-free solution.
- Open to the use of information technology tools.
- Strives to apply the principles of economy and quality in solving manufacturing tasks.

D. Independence and responsibility

- Independently thinks through manufacturing and assembly tasks and problems and solves them based on specific resources.
- Accepts well-founded critical remarks and continues his work accordingly.
- Works with fellow students to implement the tasks at hand as part of a team occasionally.
- Performs his duties using a systematic approach to problem-solving.
- Accepts aspects of sustainable development and environmental protection in its work.

2.3. Teaching methodology

During the lectures, the basic definitions, procedures, connections are introduced, the basic production planning steps and parameter calculations are presented through calculation and design exercises, written and oral communication, and the use of IT tools and techniques. To get acquainted with the most frequently used production procedures and measurement and control methods, the students perform tasks independently and in teamwork during laboratories.

2.4. Support materials

a) Textbooks

-

b) Lecture notes

Horváth-Markos: Gépgyártástechnológia, Műegyeemi Kiadó, 2005, Identifier: 45018

c) Online materials

Electronic notes: http://manuf.bme.hu

2.5. Validity of the course description

Start of validity:	2021. September 1.
End of validity:	2025. July 15.

II. SUBJECT REQUIREMENT

3. ACHIEVEMENT CONTROL AND EVALUATION

3.1 General rules

Learning outcomes are assessed based on mid-term written performance measurement (summing study-performance assessment) and active participation in laboratories. The condition for completing the course is the summary performance evaluation and the fulfilment of each of the requirements for attending lectures and laboratory exercises. The mid-term mark is determined based on the results of the summing study-performance assessment.

3.2 Assessment methods

A. Detailed description of mid-term assessments

Mid-term assessment

type: summative assessment

count: 1

purpose, description: The complex evaluation of the subject and the knowledge and ability type competence elements takes place by preparing a one-time written examination. On the one hand, the examination asks for the knowledge learned during the lectures (theory). On the other hand, it focuses on applying the acquired knowledge, focusing on problem recognition and solution, and solving practical (computational) tasks during performance evaluation. The part of the curriculum on which the assessment is based is determined by the lecturer of the subject in agreement with the supervisors of laboratories. The available working time is 100 minutes.

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

Elements of the exam:

1. written partial exam
   - obligation: does not apply
   - description:
2. oral partial exam
   - obligation: does not apply
   - description:
3. practical partial exam
   - obligation: does not apply
   - description:
4. inclusion of mid-term results
   - -

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	0 %
oral partial exam	0 %
practical partial exam	0 %
inclusion of mid-term results	0 %

3.5 Determination of the grade

grade ● [ECTS]	the grade expressed in percents
very good(5) ● Excellent [A]	above 90%
very good(5) ● Very Good [B]	86% .. 90%
good(4) ● Good [C]	71% .. 86%
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 **50%** (rounded down) of lectures.

At least **80% of** laboratory practices (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 not possible

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

new result overrides previous result

Completion of unfinished laboratory exercises:

missed laboratory practices may be performed in the teaching term at pre-arranged appointment, non-mandatory

Repetition of laboratory exercises that performed incorrectly (eg.: mistake in documentation):

incorrectly performed laboratory practice (e.g. Incomplete/incorrect report) can be corrected upon improved re-submission

3.8 Study work required to complete the course

Activity	hours / semester
participation in contact classes	28
preparation for laboratory practices	14
preparation for summary assessments	16

additional time required to complete the subject	32
summary	**90**

3.9. Validity of subject requirements

Start of validity: 2021. September 1.

End of validity: 2025. 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:

Energy 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 has the knowledge of the scientific and technical theory and practice closely related to the profession of energy engineer, with an appropriate level of manual skills.

b) ability

- Student has the ability to apply and develop procedures, models and information technologies used in the design, organisation and operation of energy machines, systems and processes.

c) attitude

- Student cooperates with representatives of other disciplines.

d) independence and responsibility

- Student has the ability to work independently on engineering tasks.

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)	-

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)	-