BSc in Mechanical Engineering 2N-AG0/2NAAG0

Engineering Design and Technology Specialization
compulsory subject

SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 8th May 2014

MANUFACTURING PROCESSES

GYÁRTÁSI ELJÁRÁSOK

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEGTAG94	**fall**	**2+0+1**	**e**	**4**	**English**

2. Subject's responsible:

Name:	Title:	Affiliation (Department):
Dr. József Nyírő	Assistant professor	Dept. of Manufacturing Science and Engineering

3. Lecturer:

Name:	Title:	Affiliation (Department):
Dr. Márton Takács	Associate professor	Dept. of Manufacturing Science and Engineering
Balázs Zsolt Farkas	Assistant lecturer	Dept. of Manufacturing Science and Engineering

4. Thematic background of the subject:
Mathematics, Materials Science, Physics

5. Compulsory / suggested prerequisites:
Compulsory: Manufacturing (BMEGEGTAG01)
Suggested: Materials Science and Testing (BMEGEMTAGA1)

6. Main aims and objectives, learning outcomes of the subject:
The aim of the subject is to present the generally applied machining processes of part manufacturing. The focus of the subject is introduction to the metal cutting theory and applications. The up to date advanced machining processes are also discussed. Students may study the practice of the metal cutting in the laboratory lessons.

7. Method of education:
2 lectures and 1 laboratory / week, 1 homework for the semester.

8. Detailed thematic description of the subject (by topic, min. 800 character):
Introduction. Collaboration of the product and production planning. Manufacturability of parts. Principles of cutting processes. Energetics of cutting processes, tool wear, tool life, surface roughness. Cutting tools. Tool materials. Geometries of single point tools. Cutting with single point tools. Turning, milling, drilling, reaming, sawing processes. Cutting with abrasive tools. Grinding tools, kinematics of grinding, grinding parameters, tool selection. Nonconventional technologies. Laser machining, waterjet machining, electrical discharge machining, electro chemical machining, electron beam machining, ion beam machining, coating technologies. Gear manufacturing. Manufacturing of cylindrical gears by cutting processes. Profiling, Maag, Fellows, Pfauter gear manufacturing technologies. Assembly. Dimension chains, Tolerancing, design for assembly. Measurement technologies in industry. Principles, measuring methods, measurement systems, process measurement. Economics of manufacturing. Production time and costs. Manufacturing Process Planning. Levels of planning, planning methods. Computations in manufacturing. Calculations related to the cutting processes. Production time and cost calculation, production optimization

9. Requirements and grading
a) in term-period
Fulfilling the compulsory laboratories, Homework (min 50%) + 2 passed tests (each min. 40%)
b) Disciplinary Measures Against the Application of Unauthorized Means at Mid-Terms, Term-End Exams and Homework
Supplement to 1/2013. (I. 30.) Dean's Order (Codicil): The following students are subject to disciplinary measures.
(a) Those students who apply unauthorized means (book, lecture notes, etc.), different from those listed in the course requirements and/or adopted by the lecturer in charge of the course assessment, in the written mid-term exams taken, and/or invite/accept any assistance of fellow students, with the exception of borrowing authorized means,
will be disqualified from taking further mid-term exams in the very semester as a consequence of their action. Further to this, all of their results gained in the very semester will be void, can get no term-end signatures, and will have no access to Late Submission option. Final term-end results in courses with practical mark will automatically become Fail (1), the ones with exam requirements will be labelled Refused Admission to Exams.
(b) Those students whose homework verifiably proves to be of foreign extraction, or alternatively, evident results or work of a third party, are referred to as their own, will be disqualified from taking further assessment sessions in the very semester as a consequence of their action. Further to this, all of their results gained in the very semester will be void, can get no term-end signatures, and will have no access to Late Submission options. Final term-end results in courses with practical mark will automatically become Fail (1), ones with exam requirements will be labelled Refused Admission to Exams.
(c) Those students who apply unauthorized means (books, lecture notes, etc.), different from those listed in the course requirements and/or adopted by the lecturer in charge of the course assessment, in the written term-end exams taken, and/or invite/accept any assistance of fellow students, with the exception of borrowing authorized means, will immediately be disqualified from taking the term-end exam any further as a consequence of their action, and will be inhibited with an automatic Fail (1) in the exam. No further options to sit for the same exam can be accessed in the very same exam period.
(d) Those students who alter, or make an attempt to alter the already corrected, evaluated, and distributed test or exercise/problem,
i.) as a consequence of their action, will be disqualified from further assessments in the respective semester. Further to this, all of their results gained in the very semester will be void, can get no term-end signatures, and will have no access to Late Submission options. Final term-end results in courses with practical mark will automatically become Fail (1), the ones with exam requirements will be labelled Refused Admission to Exams;
ii.) and will immediately be inhibited with an automatic Fail (1) in the exam. No further options to sit for the same exam can be accessed in the very same exam period.

10. Retake and repeat
In the last week of the semester the 1 compulsory laboratory may be repeated.

11. Consulting opportunities:
Consultation hours: By email appointments

12. Reference literature (compulsory, recommended):

- Downloadable materials: www.manuf.bme.hu website

13. Home study required to pass the subject:

Contact hours	42	h/semester
Home study for the courses	14	h/semester
Home study for the mid-semester checks	36	h/check
Preparation of mid-semester homework	28	h/homework
Home study of the allotted written notes	-	h/semester
Home study for the exam	-	h/semester
Totally:	**=120**	**h/semester**

14. The data sheet and the requirements are prepared by:

Name:	Title:	Affiliation (Department):
Balázs Zsolt Farkas	Assistant lecturer	Dept. of Manufacturing Science and Engineering