



**SUBJECT DATA SHEET AND REQUIREMENTS**

last modified: 18<sup>th</sup> May 2016

**MANUFACTURING SYSTEMS I.**

**GYÁRTÓRENDSZEREK I.**

1	Code	Semester nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	<b>BMEGEGT9006</b>	<b>spring</b>	<b>2+0+0</b>	<b>e</b>	<b>3</b>	<b>English</b>

**2. Subject's responsible:**

Name:	Title:	Affiliation (Department):
Dr. István Németh	Associate professor	Department of Manufacturing Science and Engineering

**3. Lecturer:**

Name:	Title:	Affiliation (Department):
Dr. István Németh	Associate professor	Department of Manufacturing Science and Engineering

**4. Thematic background of the subject:**

Basic knowledge of manufacturing engineering and machine tools.

**5. Compulsory / suggested prerequisites:**

There is no special prerequisite for this subject.

**6. Main aims and objectives, learning outcomes of the subject:**

The subject focuses on the composition and layout of manufacturing systems and their analysis, design, simulation and optimisation.

**7. Method of education:**

Lecture 2 h/w

**8. Detailed thematic description of the subject:**

Week	Lecture
1.	Main elements of manufacturing systems. Classification of manufacturing systems. Influence of designing methods (CAD, CAE), production planning methods (e.g. group technology, CAM, CAPP) and production control strategies (pl. just-in-time, lean manufacturing) on the design of manufacturing systems.
2.	Typical layouts of manufacturing systems: static, product, process, group technology.
3-6.	Machine tools of manufacturing systems: lathes, turning centres, milling machines, grinding machines, gear cutting machines, EDMs, hybrid machine tools. Selection criteria of machine tools.
7-9.	Material handling principles. Material handling equipment: conveyors, palette transport systems, forklifts, AGVs, robots.
10.	Flexible manufacturing systems. Reconfigurable manufacturing systems.

11.	Evaluation criteria and methods of manufacturing system.
12.	Systematic planning and design of the resources and layout of manufacturing system.
13-14.	Methodologies and software tools for modelling, simulation, evaluation and optimisation of manufacturing system.

## 9. Requirements and grading

### a) in term-period

N.A.

### b) in examination period

Oral exam.

### c) Disciplinary Measures Against the Application of Unauthorized Means at Mid-Terms, Term-End Exams and Homework

The following students are subject to disciplinary measures.

1. Those students who apply unauthorized means (book, lecture notes, infocommunication means, tools for storing and forwarding electronic information, etc.), different from those listed in the course requirements or adopted by the lecturer in charge of the course assessment, in the written *mid-term exams* taken, or invite or 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.
2. 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.
3. Those students who apply unauthorized means (books, lecture notes, infocommunication means, tools for storing and forwarding electronic information, etc.), different from those listed in the course requirements or adopted by the lecturer in charge of the course assessment, in the written *term-end exams* taken, or invite or 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 respective exam period.
4. 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), 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

N.A.

## 11. Consulting opportunities:

1 hr/week upon appointment by e-mail

**12. Reference literature (recommended):**

- D. J. Williams: Manufacturing Systems – An introduction to the technologies, Second Edition, Kluwer Academic Publishers, 1994
- Y. Altintas: Manufacturing Automation, Cambridge University Press, 2000
- L.N. López de Lacalle, A. Lamikiz (Editors): Machine Tools for High Performance Machining, Springer-Verlag London Limited, 2009
- S. Kalpakjian, S.R. Schmid: Manufacturing Engineering and Technology, Fourth Edition, Prentice Hall, Upper Saddle River, NJ, 07458, 2001
- Fred E. Meyers, Matthew P. Stephens: Manufacturing Facilities Design and Material Handling, Third Edition, Pearson Prentice Hall, Upper Saddle River, New Jersey, 2005

**13. Home study required to pass the subject:**

Contact hours	28	h/semester
Home study for the courses	14	h/semester
Home study for the exam	48	h/semester
<b>Total:</b>	<b>90</b>	<b>h/semester</b>

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

Name:	Title:	Affiliation (Department):
Dr. István Németh	Associate professor	Department of Manufacturing Science and Engineering