SUBJECT DATA SHEET AND REQUIREMENTS
last modified: 18th May 2016

ROBOTICS II.

ROBOTTECHNIKA II.

1	Code	Semester nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEGT9008	**spring**	**2+0+0**	**e**	**3**	**English**

2. Subject's responsible:

Name:	Title:	Affiliation (Department):
Dr. László Monostori	Professor	Department of Manufacturing Science and Engineering
Dr. Tibor Szalay	Associate professor	Department of Manufacturing Science and Engineering

3. Lecturer:

Name:	Title:	Affiliation (Department):
Dr. László Monostori	Professor	Department of Manufacturing Science and Engineering
Dr. Tibor Szalay	Associate professor	Department of Manufacturing Science and Engineering
Dr. Gábor Erdős	Associate professor	Department of Manufacturing Science and Engineering
Dr. Kemény Zsolt		MTA SZTAKI

4. Thematic background of the subject:

Algebra, Theory of Mechanism, Controlling Technics, Manufacturing, Manufacturing Systems

5. Compulsory / suggested prerequisites:

Robotics I.

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

Process planning for robot applications, trajectory planning, defining optimal robot trajectories (time, economical and technological optimization). Modern robot controlling methods.

7. Method of education:

Lecture 2 h/w

8. Detailed thematic description of the subject:

Week	Lecture
1 - 4	Modelling of robots and complex mechanisms, Kinematical and dynamical models, Equations of motion, Representing in a Symbolic mathematical programming environment
5 - 8	Planning of optimal trajectories, time, energetics, technology and economical optimization of robot applications and robot motions.

| 9-12 | Adaptive control technics, model reference control, direct and computed torque control |
| 13-14 | Collaborative robotics, human robot cooperation |

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):

- Paul E. Sandin: Robot mechanism and mechanical devices, McGraw-Hill 2003

- Jorge Angeles: Fundamentals of robotic mechanical systems, Springer 2003

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
Total:	**90**	**h/semester**

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

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