Subject: **POLYMERTECHNOLOGY**
Coordinator: **Gábor Balogh**
Year, Semester: 3rd year/2nd semester
Lecture: **2**
Practical: **1**

1st **week:**
Lecture: Position of polymers in materials world.

2nd **week:**
Lecture: Structures of polymers.
Seminar: Overview of polymer types and their production methods.

3rd **week:**
Lecture: Mechanical properties of Polymers.
Practical: Tensile test of different polymer types.

4th **week:**
Lecture: Affect of temperature changing on structure of polymers.
Practical: Bend test of different types of polymers.

5th **week:**
Lecture: Manufacturing technologies of polymers I.
Practical: Hardness of different types of polymers.

6th **week:**
Lecture: Manufacturing technologies of polymers II.
Practical: Izod's Impact test of polymers.

7th **week:**
Lecture: Manufacturing technologies of polymers III.
Practical: Fatigue tests of polymers.

8th **week:**
Lecture: Mid-term test.
Self Control Test

9th **week:**
Lecture: 3D polymer products manufacturing technologies I.
Practical: Polymer composites.

10th **week:**
Lecture: 3D polymer products. manufacturing technologies II.
Practical: A mechanical test of polymer composites.

11th **week:**
Lecture: Rubber types.
Practical: A mechanical test of polymer composites.

12th **week:**
Lecture: Manufacturing technologies of automotive rubber parts.
Practical: A mechanical test of polymer composites.

13th **week:**
Lecture: Polymer composites.
Practical: Recycling of polymers.

14th **week:**
Lecture: Recycling of polymers.
Practical: Supplementation.

15th **week:**
Lecture: End-term test.
Self Control Test

Requirements

Topics: The students get acquainted with the texture of polymers, their mechanical properties, manufacturing processes and utilization. The main focus of the subject is the polymer components in vehicle industry and their manufacturing processes and recycling.

A, for signature: Attendance at lectures is recommended, but not compulsory. Participation at practice is compulsory. Students must attend practice classes and may not miss more than three occasions during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Students can't make up a practice class with another group. Attendance at practice will be recorded by the practice leader. Being late is counted as an absence. In case of further absences, a medical certificate needs to be presented. Missed practices should be made up for at a later date, being discussed with the tutor. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence due to the lack of active participation in class. Students have to submit all the tasks as scheduled minimum on a sufficient level. During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 15th week. Students have to sit for the tests.

B, for grade: The course ends with an exam. The minimum requirement for the mid-term and end-term tests is 60%. Based on the score of the tests separately, the grade for the tests is given according to the following: Score/Grade: 0-59 fail (1), 60-69 pass (2), 70-79 satisfactory (3), 80-89 good (4), 90-100 excellent (5). If the score of any test is below 60, the student once can take a retake test covering the whole semester material.

Required reading materials

L. Edwards, M. Endean: Manufacturing with Materials
Butterworths, 1990. ISBN: 0-408-02770-3
M. F. Ashby: Materials Selection in Mechanical Design
3rd. Elsevier, 2005. ISBN: 0-7506-6168-2
DeGarmo, Black, Kohser: DeGarmo's Materials and Processes inManufacturing
10th.2008. ISBN: 978-0-470-05512-0
Groover: Fundamentals of Modern Manufacturing: Materials, Processes and Systems
3rd.2007. ISBN: 978-0-471-74485-6