

Óbudai Egyetem Rejtő Sándor Könnyűipari és Könnyűipari Mérnöki Kar
 Médiatechnológiai és Könnyűipari Intézet
 Tananyagfelosztás és követelményrendszer
 Industrial Design Engineering (English)

Structures of materials I.

2022/23. II.

ÓBUDA UNIVERSITY						
Rejtő Sándor Faculty of Light Industry and Environmental Engineering			<i>Faculty</i>	Media Technology and Light Industry		<i>Institute</i>
<i>Hungarian title of the course</i>			–		<i>Neptun code</i>	RMXAT1BBNE
<i>English title of the course</i>			Structures of materials I.		<i>Credit</i>	5
<i>Type (compulsory/elective:)</i>		compulsory	<i>Education Type</i>	Full-time	<i>Semester</i>	2
<i>Study field</i>		Industrial Design Engineering (English)				
<i>Lect</i>	Andrea Ádámné Major, Piroska Prokai					
<i>Prerequisite</i>		---				
<i>Hours/week</i>	<i>Lecture</i>	2	<i>Practical work</i>	0	<i>Laboratory work</i>	2 Piroska Prokai
<i>Grading type</i>	“é” during the term	<i>Language of the course</i>	English	<i>Time slot in weekly schedule, location</i>	You can see on the Neptun system	
CURRICULUM						
<i>Aim of the subject</i>						
<p>The students get a summary on basic chemistry based upon their high school studies (types of materials, atoms, molecules, primary and secondary bonds). Polymers as most important material for future industrial designers are presented: natural polymers, synthetic polymers (polymerization reactions, structure of polymers and their properties, polymer manufacture methods), fibres, and general fibre properties, natural and synthetic fibres.</p> <p>Practice: mechanical and chemical tests of fibrous materials, processing of thermoplastic polymers.</p>						
<i>Detailed schedule of the course</i>						
<i>Topics of lectures and Practice</i>						
Term week	Description					
1.	Introduction: the aim and the program of the subject, types of materials.					
2.	Practice/1: Identification of fibrous materials					
3.	Atoms, molecules, primary and secondary bonds, state of matter;					
4.	Practice/2: Mechanical characterization of fibrous materials					
5.	Metals and alloys: basic concepts; Ceramics: basic concepts, manufacturing					
6.	Practice/3: Chemical characterization of fibrous materials; Processing of thermoplastic polymer					

7.	Mid-term test
8.	Polymers/1: basic concepts, polymers in the nature, synthetic polymers, polymerization reactions (chain, step), most important synthetic polymers; plastics
9.	Polymers/2: Structural characteristics: macromolecules, interactions, degree of order; state of matter, phase, physical states, thermomechanical curves
10.	Practice/4: Processing of thermoplastic polymer /
11.	Polymers/2: Structural characteristics: macromolecules, interactions, degree of order; state of matter, phase, physical states, thermomechanical curves
12.	Polymers/3: Processing of thermoplastic polymers; fibre-forming polymers, general fibre characteristics. natural and synthetic fibres
13.	Short oral presentation
14.	Retake

Requirements

Attendance at lectures

Attendance at the lectures is greatly suggested. Attendance at the practices is obligatory.

Exams and tests (types, data)

7.	Mid term test
13.	Short oral presentation
14.	Retake

Requirements for qualification

Fulfilment of the two oral presentations and participation in the practices

Type of exam (written, oral, tests etc.) and the method of assessment:

The final mark is determined mostly by the results of the oral presentations

Literature

<i>Compulsory</i>	Handouts
<i>Recommended</i>	W. D. Callister, D. G. Rethwisch: Materials science and engineering, an introduction, Wiley, Eighth edition, 2010: selected chapters
<i>Others</i>	moodle system material

Quality Management

Budapest, 15. December 2022.

László Koltai dr.
dean of the institute

