

<b>Óbuda University</b> Bánki Donát Faculty of Mechanical and Safety Engineering		<b>Institute of Materials and Manufacturing Sciences</b> Department of Materials Technology		
<b>Subject: Material Science I.</b> <b>2023/24 II semester</b>				<b>Credits:</b>
All regular students of the Faculty are eligible to participate.				
Subject leader:	<b>Varga Péter</b>		Lecturer:	<b>Varga Péter</b>
Prerequisite:	Anyag- és gyártásismeret I., Anyagtudomány I. , Mérnöki anyagok , továbbá szaknyelvi kurzus vagy B2, vagy C1 nyelvvizsga vagy belső vizsga vagy haladó nyelvi tárgy.			
Lessons per Week:	Lectures: 2	Practical lessons: 0	Laboratory lessons: 0	Consultation by request
Evaluation:	<b>Midterm mark</b>			
<b>Course description</b>				
Based on the students previously obtained knowledge the subject summarizes the topics of material sciences in English language. The aim is to familiarize students with the terms and phrases used in topics such the structure and properties of materials, and the methods and evaluation of materials testing, tensile test, hardness test, toughness of metals, impact test. Fatigue and creep of metals. Phase diagrams. The iron-carbon phase diagram. Non-equilibrium transformations and heat treatment of metals.				

<b>Lecture program</b>	
<b>Week of semester</b>	<b>Subject</b>
1	General overview of engineering materials Tensile test
2	Hardness test Toughness of metals, impact test
3	Fatigue and creep of metals
4	Crystal structure of metals. Ideal crystals.
5	Crystal structure of metals. Real crystals, imperfections in crystals
6	Crystallization of metals and alloys. The structure of alloys
7	Deformation, strain hardening, recrystallization
<b>8</b>	<b>Public holiday</b>
9	Phase diagrams
10	The iron-carbon phase diagram
11	Non-equilibrium transformation of steels
12	Test
13	Make-up test
14	Repeated presentations

<b>2. References</b>
<b>J. Verebély-Dévényi, P. Rácz:</b> Engineering materials, Óbuda University, 2012.
<b>M. F. Ashby and D.R.H. Jones:</b> Engineering materials 1. Butterworth-Heinemann, 2012.
<b>M. F. Ashby and D.R.H. Jones:</b> Engineering materials 2. Butterworth-Heinemann, 1998.
Lecture presentation slides; elearning.uni-obuda.hu

<b>3. Requirements</b>	
<b>a) Participation:</b> Visiting lectures is obligatory.	
<b>b) Tests and other tasks</b>	
Week of semester	Tasks
2-11	Student presentations
12	Test
13	Make-up test
14	Repeated presentations
<b>a) Terms of signature and midterm mark</b> Students who fail to give a presentation and/or fail to participate in the test, will get a “forbade” mark. This result is forbidding those students to repeat the tasks and improve their midterm mark.	
<b>b) Evaluation of midterm mark</b> The midterm mark is the mean value of the marks of the test (or make-up test) and the student presentation if both the marks are at least “satisfactory” (2). If any of the marks is “failed” (1) then the midterm mark is “failed” (1) as well.	
<b>c) Repeating and improving of the results of tests and other tasks</b> A missed or failed test can be rewritten on the 13th week of the semester. A missed or failed presentation can be repeated on the 14th week of the semester. Please note that due to time limitation only a limited number of presentations can be presented on the last lecture.	
<b>d) Exams</b>	
<b>e) Repeating in the exam period</b> “Failed” midterm mark can be improved in the first two weeks (10 working days) of the exam period as follows. Failed tests can be rewritten, and failed presentations can be repeated separately.	

2024. 02. 12.

Péter Varga