

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2022/2023 SEMESTER AUTUMN

<i>Course title</i>	<i>Materials Science</i>
<i>Course Code</i>	MSB021AN
<i>Hours/Week: le/pr/lab</i>	200
<i>Credits</i>	2
<i>Degree Programme</i>	Civil Engineering BSc
<i>Study Mode</i>	Full-time schedule
<i>Requirements</i>	Mid-semester grade
<i>Teaching Period</i>	1. semester
<i>Prerequisites</i>	-
<i>Department(s)</i>	Civil Engineering Department
<i>Course Director</i>	Dr Anita Dolgosné Kovács
<i>Teaching Staff</i>	Dr Adél Len

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

The course provides basic knowledge about materials structure on various - atomic, mesoscopic, macroscopic - levels, on destructive and non-destructive methods for studying the structure of materials. It gives an overview on the basic construction materials and the most actual developments in the field of construction materials. The course topics starts from the smallest entities of the material, and builds up the macroscopic objects step by step, with emphasis on the composition of construction materials. Several novel technologies and materials will also be discussed.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

Students will gain from this course:

- Knowledge about materials chemical and physical properties
- Knowledge on methods of studying materials structure
- Knowledge about various novel materials used especially in construction
- Experience in understanding a scientific paper and experience in presenting a new topic before an audience

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE	TOPICS
	1. Introduction. From quarks to atoms. Atomic structure
	2. Periodic table. Elements. Compounds. Mixtures
	3. Chemical bonding. Solid, liquid and gas phases. Amorphous and crystalline structure
	4. Real crystals, crystallographic defects
	5. Solid construction materials
	6. Novel materials in construction
	7. Destructive and non-destructive methods for studying the characteristics of materials

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	-			
2.	Course description. Orientation. Explanation of students' tasks. Introduction. From quarks to atoms. Atomic structure. Periodic table. Elements. Compounds. Mixtures	Lectures' slides	Choose the topic for the individual task and presentation from the provided list.	By the 4 th week class.
3.	-			
4.	Chemical bonding. Solid, liquid and gas phases. Amorphous and crystalline structure. Real crystals, crystallographic defects	Lectures' slides	Final choice of the presentations topic and work on the individual task.	
5.	-			
6.	Solid construction materials	Lectures' slides	Work on the individual task.	
7.	-			
8.	Novel materials in construction	Lectures' slides	Send the ppt presentations in Microsoft Teams (at least 80% done)	By the 8 th week class.
9.	AUTUMN HOLIDAY			
10.	Destructive and non-destructive methods for studying the characteristics of materials	Lectures' slides	Consultation about the presentations	
11.	-			
12.	Students presentations			
13.	-			
14.	Multiple choice test			
15.	-			

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attendance sheet

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course resulting in mid-term grade (PTE TVSz 40§(3))

Mid-term assessments, performance evaluation and their ratio in the final grade (The samples in the table to be deleted.)

Type	Assessment	Ratio in the final grade
Students presentations	100	50 %
Multiple choice test	100	50 %

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Unsuccessful presentations can be repeated once in the 14th study week, unsuccessful multiple choice tests can be repeated once in the first two weeks on the examination period.

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 % (84%)
satisfactory (3)	55 % ... 70 % (69%)
pass (2)	40 % ... 55 % (54%)
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

[1.] Slides of the lectures – provided through the Microsoft Teams

RECOMMENDED LITERATURE AND AVAILABILITY

[2.] William D. Callister Jr.: Material Science and Engineering, John Wiley and Sons, Inc., 2007, New York

[3.] J. W. Morris Jr.: A Survey of Materials Science, Department of Material Science and Engineering, Berkley, 2007