

**COURSE SYLLABUS SEMESTER**

<b>Name of Course</b>	<b>CONSTRUCTION MATERIALS 1</b>
<b>Course Code</b>	<b>MSB080AN-EA-00</b>
<b>Allotment of Hours per Week</b>	<b>2 lectures, 1 practice/2 lab /week</b>
<b>Number of Credits</b>	<b>5</b>
<b>Program</b>	<b>B.Sc in Civil Engineering</b>
<b>Evaluation</b>	<b>Exam, Midterm, Homework, Presentation, Laboratory Report (semester mark)</b>
<b>Semester</b>	<b>2nd</b>
<b>Prerequisites</b>	<b>None</b>
<b>Department</b>	<b>Civil Engineering</b>
<b>Instructor</b>	<b>Ali Mohamed Mohamed Salem</b> <b>Office: Boszorkány street 2 C0042</b> <b>E-mail: ali.salem@mik.pte.hu</b>

**INTRODUCTION, GENERAL COURSE DESCRIPTION**

This course provides an introductory overview of the various materials used in construction industry. After an introduction into the history of building materials fundamental principles of structural, physical and long-term performance of materials are presented. Students will learn about material and product manufacturing techniques and how they relate to mechanical and non-mechanical properties of the various materials. Special emphasis is given in the course to concrete mix design and concrete technology.

Students also have the opportunity to experience material capacity and behaviour as well as construction methods in demonstrations and laboratory experiments. Furthermore, material applications and detailing in structural and non-structural building components are explored. Resulting from this course, students will gain a comparative knowledge of material properties and possible applications in construction and architecture.

## LEARNING OBJECTIVES

Students will gain from this course:

- Comparative knowledge of material properties for most common and advanced building materials,
- Practical knowledge of concrete mix design,
- Understanding of typical and potential applications of construction materials,
- Ability to identify crucial problem areas in manufacture and applications of building materials,
- Understanding of importance of experimental verification of material properties.

Furthermore, upon completion of this course, the student will be able to:

- Conduct civil engineering experiments in a team setting,
- Analyse and interpret the resulting data of the experiments.
- Create a complete formal laboratory report describing the particular experiment, summarizing the results and analysing the implications of the test.

### Methodology:

- **Lectures:** will give an introduction to the properties, manufacturing and practical use of construction materials.
- **Practical class and lab practice:** Students will be assigned tasks to complete. These tasks may expand on the experimental work and may have “research components” where students need to gather information required to complete a task and present its conclusions.
- **Exams:** Accumulated knowledge is tested in two exams: a midterm and a final exam. Both feature multiple-choice, true-false or short essay questions.

### Schedule:

Week	Lecture	Practical class and laboratory
Week 1	Course description. Orientation. Introduction to construction materials.	No class.
Week 2	History of construction materials I.: From prehistoric construction to modern architecture.	Introduction to Properties and Testing of Materials. Physical Properties (Properties associated with mass distribution -Hydro technical properties)
Week 3	History of construction materials II.: Concrete.	Cement, mortar and gypsum test. Concrete aggregates.

Week 4	Basics of concrete technology I. Constituent materials of concrete. Manufacturing of concrete products.	Sieve analysis of aggregate
Week 5	Basics of concrete technology II. Fresh concrete properties. Tests on fresh concrete.	Sieve analysis of aggregate
Week 6	Concrete Mix Design.	Laboratory tests on cement, lime and mortar.
Week 7	Special concretes.	Design of normal concrete mixes.
Week 8	<b>Midterm exam</b>	Laboratory tests on concrete (compression + flexural)
Week 9	Metals. Steel reinforcement	<b>Laboratory tests on concrete (Compression + flexural)</b>
Week 10	Timber structures	Concrete Admixture + design of special types of concrete
Week 11	Spring Break	Spring Break
Week 12	Masonry structures. Fibre composites.	Laboratory tests on steel.

Week 13	Mechanical properties of engineering materials.	Laboratory tests Brick and timber. Summary
Week 14	<b>Final exam.</b>	
Week 15	<b>Second exams</b> (only if required). <b>Student's presentations.</b>	

## ATTENDANCE AND GRADING

### Attendance:

Attending is required all classes, and will impact the grade (max. 10%). Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

### Grading:

10% - Attendance

30% - Assignments

20% - Midterm Exam

40% - Final Exam

### Offered exam grade:

Evaluation in percents	Numeric grade
89%-100%	5

77%-88%	4
66%-76%	3
55%-65%	2
0-54%	1

## READINGS AND REFERENCE MATERIALS

- Peter Domone, John Illston: "Construction Materials: Their Nature and Behaviour", Fourth Edition, 2010 by CRC Press, ISBN 9780415465151.
- Presentations

## SCHEDULE

		SZORGALMI IDŐSZAK, OKTATÁSI HETEK															VIZSGAIDŐSZAK				
2019/2020. 2. FÉLÉV		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1.	2.	3.	4.	5.
<b>Előadás tematika sorszáma</b>																					
<b>Gyakorlat/Labor sorszáma</b>																					
<b>Zárthelyi dolgozat</b>																					
<b>Otthoni munka</b>	<b>kiadása</b>																				
	<b>beadási határidők</b>																				
<b>Jegyző-könyvek</b>	<b>beadási határidők</b>																				
<b>Egyebek</b>	<b>pl. beszámolók,</b>																				
	<b>stb.</b>																				

Alírás / Félévközi jegy megadása																				
Vizsgák tervezett időpontjai																				