

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2022/2023 SEMESTER SPRING

Course title	CONSTRUCTION MATERIALS 1
Course Code	MSB016ANEP
Hours/Week: le/pr/lab	2 lectures, 2 lab /week
Credits	5
Degree Programme	B.Sc in Civil Engineering
Study Mode (TVSZ-ben training schedule)	Full-time schedule
Requirements	None
Teaching Period	Semester 2
Prerequisites	None
Department(s)	Civil Engineering
Course Director	
Teaching Staff	Ali Mohamed Mohamed Salem
Hours/Week: le/pr/lab	2 lectures, 2 lab /week

COURSE DESCRIPTION

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

This course provides an introductory overview of the various materials used in the 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 the 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 of this course, students will gain a comparative knowledge of material properties and possible applications in construction and architecture.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

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

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 the 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.

2. COURSE CONTENT

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

TOPICS

LECTURE	
	1. Introduction to construction materials.
	2. History of construction materials I.: From prehistoric construction to modern architecture.
	3. History of construction materials II.: Concrete.

PRACTICE

4. Basics of concrete technology I.
5. Constituent materials of concrete. Manufacturing of concrete products.
6. Basics of concrete technology II.
7. Fresh concrete properties.
8. Tests on fresh concrete.
9. Concrete Mix Design.
10. Special concretes.
11. Metals. Steel reinforcement
12. Timber structures
13. Masonry structures. Fibre composites.
14. Mechanical properties of engineering materials.

1. Introduction to Properties and Testing of Materials. Physical Properties (Properties associated with mass distribution -Hydro technical properties)
2. Cement, mortar and gypsum test. Concrete aggregates.
3. Sieve analysis of aggregate
4. Sieve analysis of aggregate
5. Laboratory tests on cement, lime and mortar.
6. Design of normal concrete mixes.
7. Laboratory tests on concrete
8. Laboratory tests on concrete (compression + flexural)
9. Laboratory tests on concrete (Compression + flexural)
10. Concrete Admixture + design of special types of concrete
11. Laboratory tests on steel.
12. Laboratory tests Brick and timber. Summary

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.	Course description. Orientation. Introduction to construction materials.	-----
2.	History of construction materials I.: From prehistoric construction to modern architecture.	Lecture notes and slides	----	-----
3.	History of construction materials II.: Concrete.	Lecture notes and slides	Assignment _1	02-03-2023
4.	Basics of concrete technology I. Constituent materials of concrete. Manufacturing of concrete products.	Lecture notes and slides	Assignment _2	09-03-2023
5.	Basics of concrete technology II. Fresh concrete properties.	Lecture notes and slides		
6.	Tests on fresh concrete.	Lecture notes and slides		
7.	Concrete Mix Design.	Lecture notes and slides	Assignment _3	30-03-2023
8.	Special concretes.	Lecture notes and slides		
9.	Spring break	-----	-----	
10.	Midterm exam		<i>Midterm 1</i>	13-04-2023
11.	Metals. Steel reinforcement	Lecture notes and slides	Retake <i>Midterm 1</i>	20-04-2023
12.	Timber structures	Lecture notes and slides		

13.	Masonry structures. Fibre composites.	Lecture notes and slides		
14.	Mechanical properties of engineering materials.	Lecture notes and slides	Assignment _4	18-05-2023
15.	Midterm 2		Midterm 2	18-05-2023
16.	Retake Midterm 2		Retake Midterm 2	25-05-2023

PRACTICE, LABORATORY PRACTICE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.	No class.
2.	Introduction to Properties and Testing of Materials. Physical Properties (Properties associated with mass distribution -Hydro technical properties)	Lecture notes and slides	----	
3.	Cement, mortar and gypsum test. Concrete aggregates.	Lecture notes and slides	Assignment _1	02-03-2023
4.	Sieve analysis of aggregate	Lecture notes and slides	Assignment _2	09-03-2023
5.	Sieve analysis of aggregate	Lecture notes and slides		
6.	Laboratory tests on cement, lime and mortar.	Lecture notes and slides		
7.	Design of normal concrete mixes.	Lecture notes and slides	Assignment _3	30-03-2023
8.	Laboratory tests on concrete	Lecture notes and slides		
9.	Spring break	-----	-----	
10.	Laboratory tests on concrete (compression + flexural)	Lecture notes and slides	Midterm 1	13-04-2023
11.	Laboratory tests on concrete (Compression + flexural)	Lecture notes and slides	Retake Midterm 1	20-04-2023
12.	Concrete Admixture + design of special types of concrete	Lecture notes and slides		
13.	Laboratory tests on steel.	Lecture notes and slides		
14.	Laboratory tests Brick and timber. Summary	Lecture notes and slides	Assignment _4	18-05-2023
15.	Midterm 2		Midterm 2	18-05-2023
16.	Retake Midterm 2		Retake Midterm 2	25-05-2023

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

Type	Assessment	Ratio in the final grade
Attendance	10 points	10%
Assignments	20 points	20%
Midterm Exam	30 points	30%
Final Exam	40 points	40%
Signature requirements: Writing 2 midterm tests with a minimum 40%, submitting 3 homework.		

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

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.

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 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

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

Type of examination (written, oral): written

The exam is successful if the result is minimum 40 %.

4. SPECIFIED LITERATURE

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

COMPULSORY READING AND AVAILABILITY

- [1.] Primary compulsory reading and its availability
- [2.] Compulsory literature and its availability

RECOMMENDED LITERATURE AND AVAILABILITY

- [3.] Peter Domone, John Illston: "Construction Materials: Their Nature and Behaviour", Fourth Edition, 2010 by CRC Press, ISBN 9780415465151.
- [4.] - Lecture notes and slides