

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2023/2024 SEMESTER SPRING

<i>Course title</i>	CONSTRUCTION MATERIALS 1
<i>Course Code</i>	MSB016ANEP
<i>Hours/Week: le/pr/lab</i>	2 lectures, 2 lab /week
<i>Credits</i>	5
<i>Degree Programme</i>	B.Sc in Civil Engineering
<i>Study Mode (TVSZ-ben training schedule)</i>	Full-time schedule
<i>Requirements</i>	None
<i>Teaching Period</i>	Semester 2
<i>Prerequisites</i>	None
<i>Department(s)</i>	Civil Engineering
<i>Course Director</i>	
<i>Teaching Staff</i>	Ali Mohamed Mohamed Salem
<i>Hours/Week: le/pr/lab</i>	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	TOPICS
	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.
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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	Assignment _1	22-02-2024
3.	Basics of concrete technology I. Constituent materials of concrete. Manufacturing of concrete products.	Lecture notes and slides	Assignment _2	29-02-2024
4.	Basics of concrete technology II. Fresh concrete properties.	Lecture notes and slides	Assignment _3	07-03-2024
5.	Tests on fresh concrete.	Lecture notes and slides	Assignment _4	14-03-2024
6.	Concrete Mix Design.	Lecture notes and slides	Assignment _5	21-03-2024
7.	Special concretes.	Lecture notes and slides	Assignment _6	28-03-2024
8.	Spring break			
9.	Midterm exam	Exam 1	-----	-----
10.	Metals. Steel reinforcement	Lecture notes and slides	Assignment _7	18-04-2024
11.	Timber structures	Lecture notes and slides	Assignment _8	25-04-2024
12.	Masonry structures. Fibre composites.	Lecture notes and slides	Assignment _9	02-05-2022

13.	Mechanical properties of engineering materials.	Lecture notes and slides	Assignment_10	09-05-2022
14.	Final exam.	Exam2		

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	22-02-2024
4.	Sieve analysis of aggregate	Lecture notes and slides	Assignment_2	29-02-2024
5.	Sieve analysis of aggregate	Lecture notes and slides	Assignment_3	07-03-2024
6.	Laboratory tests on cement, lime and mortar.	Lecture notes and slides	Assignment_4	14-03-2024
7.	Design of normal concrete mixes.	Lecture notes and slides	Assignment_5	21-03-2024
8.	Laboratory tests on concrete	Lecture notes and slides	Assignment_6	28-03-2024
9.	Autumn break	-----		
10.	Laboratory tests on concrete (compression + flexural)	Lecture notes and slides	-----	-----
11.	Laboratory tests on concrete (Compression + flexural)	Lecture notes and slides	Assignment_7	18-04-2024
12.	Concrete Admixture + design of special types of concrete	Lecture notes and slides	Assignment_8	25-04-2024
13.	Laboratory tests on steel.	Lecture notes and slides	Assignment_9	02-05-2022
14.	Laboratory tests Brick and timber. Summary	Lecture notes and slides	Assignment_10	09-05-2022
15.	Final exam.			

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
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Attendance	10 points	10%
Assignments	20 points	20%
Midterm Exam	30 points	30%
Final Exam	40 points	40%
<i>Signature requirements: Writing 2 midterm tests with a minimum 40%, submitting 3 homework.</i>		

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 %.

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for **30 %**, the performance at the exam accounts for **40 %** in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

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.

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