



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Technologia betonu/Concrete technology

Course

Field of study

Sustainable Building Engineering

Area of study (specialization)

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Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/1

Profile of study

general academic

Course offered in

English

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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Prerequisites

Knowledge: basic knowledge of building materials chemistry, mathematics, physics.

Skills: can use and analyse information from available literature sources.

Social competences: awareness of the need for continuous updating and supplementing of knowledge and skills.

Course objective

To introduce the students with the basic knowledge of concrete mix design, classification and scope of application of concrete in the construction industry and to conduct standard concrete works.



Course-related learning outcomes

Knowledge

Have knowledge in the fields of mathematics, physics, chemistry, biology and other fields of sciences suitable to formulate and solve problems concerning sustainable building engineering (civil engineering, environmental engineering and architecture).

Have knowledge of most frequently applied building and installation materials and their properties, research methods, basic elements of their design, performance and assembly technologies, methods for evaluation and maintenance of structure technical condition.

Skills

Are able to obtain information from literature, databases and other properly selected information sources; can integrate the obtained information, interpret and evaluate it, as well as draw conclusions, formulate, discuss and justify opinions.

Are able to design selected elements and simple metal, concrete, wooden and brick structures.

Social competences

Take responsibility for the accuracy and reliability of working results and their interpretation.

Understand the need of team work, are responsible for the safety of their own work and team's work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Colloquium in written form within the time limit given at the beginning of the semester. Development of research results as a project. Colloquium at the end of the semester on the material for laboratory exercises.

Programme content

Lecture

Basic information on standardization and classification of cement concretes. Concrete components. Properties of concrete mix and hardened concrete. Methods of designing concrete composition. Basic technological processes connected with concrete making, transport, placing and curing. Concrete quality control. Additives (division, test methods, evaluation, discussion of basic varieties). Additives (dusty, crumbly, complex additives). Design of concretes with additives and admixtures, concreting under reduced temperature conditions, concreting of large concrete masses, special concretes, light concretes (division, application, basic components). Basics of lightweight concrete design.

Laboratory

Basic information on standardization and classification of cement concretes. Concrete components. Properties of concrete mix and hardened concrete. Composition design methods Concrete mix design (one of two experimental methods) with set consistency parameters and strength class. Testing of



constituent materials (aggregates, cement, water) for suitability (compliance with the standard) for concrete execution. Making a concrete mix. Examination of its basic characteristics (consistency, volume), making concrete samples. Checking the influence of various types of admixtures has the features of the mix made (e. g. (plasticization, binding time). Compressive strength test of concrete by destructive method. Determination of the actual strength class of the designed concrete.

Teaching methods

Informational lecture with elements of the case method, laboratory method (teamed experiments conducted by students), e-learning methods

Bibliography

Basic

1. A.M. Neville, Concrete technology.
2. J. Newman, Advanced Concrete Technology, Constituent Materials and Concrete Properties.

Additional

Materials prepared by the teacher. Description and instructions for laboratory exercises.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	20	1,0

¹ delete or add other activities as appropriate