



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Concrete technology [S1BZ1E>TB]

Course

Field of study

Sustainable Building Engineering

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

English

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

dr hab. inż. Agnieszka Ślosarczyk prof. PP
agnieszka.slosarczyk@put.poznan.pl

Lecturers

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 science 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:

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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.

Laboratory

Composition design methods.

Making a concrete mix. Testing of the concrete mix and hardened concrete.

Course topics

Wykład

Podstawowe informacje dotyczące normalizacji i klasyfikacji betonów cementowych. Składniki betonów.

Właściwości mieszanki betonowej i betonu stwardniałego. Metody projektowania składu betonów.

Podstawowe procesy technologiczne związane z wykonaniem, transportem, ułożeniem i pielęgnacją

betonu. Kontrola jakości betonu. Domieszki (podział, metody badań, ocena, omówienia podstawowych odmian). Dodatki (pylaste, okruczowe, dodatki kompleksowe. Projektowanie betonów z dodatkami i

domieszkami, betonowanie w warunkach obniżonej temperatury, betonowanie dużych maszynów

betonowych, betony specjalne, betony lekkie (podział, zastosowanie, podstawowe składniki). Podstawy projektowania betonów lekkich.

Ćwiczenia laboratoryjne

Projekt mieszanki betonowej (jedną z dwóch metod doświadczalnych) o zadanych parametrach

konsystencji i klasy wytrzymałości. Badanie materiałów składowych (kruszywo, cementu, wody) pod

kątem przydatności (zgodności z normą) do wykonania betonu. Wykonanie mieszanki betonowej.

Badanie jej podstawowych cech (konsystencja, objętość), wykonanie próbek betonowych. Sprawdzenie

wpływu różnego rodzaju domieszek na cechy wykonanej mieszanki (m.in. uplastycznienie, czas

wiązania). Badanie wytrzymałości na ściskanie betonu metodą niszczącą. Określenie rzeczywistej klasy wytrzymałości zaprojektowanego betonu.

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	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00