COURSE DESCRIPTION CARD - SYLLABUS

Course name
Advanced Construction Materials

Course

Field of study
Civil Engineering

Year/Semester
1/2

Area of study (specialization)
Construction Engineering and Management

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Agnieszka Ślosarczyk, prof. PP

email: agnieszka.slosarczyk@put.poznan.pl

tel. 616652166

Faculty of Civil and Transport Engineering

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:
mgr inż. Maria Ratajczak

email: maria.ratajczak@put.poznan.pl

tel. 616652165

Faculty of Civil and Transport Engineering

ul. Piotrowo 3, 60-965 Poznań

Prerequisites

KNOWLEDGE: The basic knowledge from the construction materials.

SKILLS: Ability to characterise and use a building material in a building.

SOCIAL COMPETENCES: The consciousness of the necessity of continuous updating and supplementings of the building knowledge and engineer skills.

Course objective

To intruduce the students with knowledge about the manufacturing processes and characteristics of modern building materials

Course-related learning outcomes

Knowledge

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

Have an in-depth 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

Can make plans autonomously, carry out lifelong learning processes and direct others in this respect; can apply the obtained knowledge into building engineering in order to communicate with different target groups using specialized terminology and discuss important problems of building industry

Social competences

Are ready to autonomously complete and broaden (extend) knowledge in the field of modern processes and technologies of building engineering

Can realise that it is necessary to improve professional and personal competence; are ready to critically evaluate the knowledge and received content

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - colloquium in written form within the time limit given at the beginning of the semester. Laboratories - colloquium at the end of the semester on the material for laboratory exercises. Passing treshold - 50%.

Programme content

Functions of building materials. Basic parameters and criteria for selecting building materials. New trends in cement and concrete technology. Self-compacting and photocatalytic concretes. HSC, UHSC and fibroconcrete. Transparent and glass concrete. Geopolymer concrete. Flexible and self-repairing concrete. Corrosion and durability of building materials. Nanotechnologies in construction. Glass as a modern building material. Wood as a modern building material. Metal as a modern building material. Ceramics as a modern building material. Contemporary thermo-insulating and anti-moisture and waterproofing materials.

Teaching methods

Informational lecture with elements of the case method, laboratory method (team experimentation by students), e-learning methods.

Bibliography

Basic

1. P. Domone, J. Illston, Construction Materials Their Nature and Behaviour, 4th edition, 2010

2. J. Newman, B.S. Choo, Advanced Concrete Technology II, 2003

3. M. A. Caldarone, High strength Concrete, 2009.

4. K. Gopalakrishnan, B. Birgisson, P. Taylor, N. Attoh-Okira, Nanotechnology in Civil Infrastructure, 2011

Additional

Scintific articles

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1

[1] delete or add other activities as appropriate