COURSE DESCRIPTION CARD - SYLLABUS

Course name
Construction Engineering

Course

Field of study
Civil Engineeing
Year/Semester
1/2
Area of study (specialization)
Structural Engineering, CEM
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
30
Laboratory classes
Other (e.g. online)
Tutorials
15
Projects/seminars
15

Number of credit points
3

Lecturers

Responsible for the course/lecturer:
prof. dr hab.inż. Józef Jasiczak - 16 h,

Responsible for the course/lecturer:
dr hab.inż. Katzrzyna Rzeszut - 6 h

dr hab.inż. Zbigniew Pozorski - 4 h,

dr inż. Anna Knitter-Piątkowska - 4 h

Prerequisites

The student should have knowledge of building materials and concrete technology, general construction, concrete, metal and wooden structures, broadly understood construction technologies.

Course objective

The aim of the course is to show the latest achievements in the field of material engineering in construction applications and an overview of contemporary construction realizations at the construction site - high-rise construction.

Course-related learning outcomes

Knowledge

KB_W05 know in detail currently utilised construction materials and products, their properties and testing methods as well as production and assembly technologies.

Skills

KB_U17 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, justify, discuss and present opinions.

Social competences

KB_K03 are ready to autonomously complete and broaden (extend) knowledge in the field of modern processes and technologies of building engineering.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified at the final test at the end of the semester. The exam consists of three blocks of questions. Two indicated by the examiner, one - to be chosen by the student. Passing threshold - 70%.

Knowledge acquired during projects/seminar exercises - assessment based on a report on the calculations.

Programme content

Lecture :the most important steps of structural design process; comparison of mechanical characteristics of main constructional materials;structural elements versus static scheme;classification and draw examples of cable structures;division and examples of high buildings ; execution technology and description Burch Dubai building;aluminum-glass facades and other materials (eg. sandwich panels);fire savety;fiber reinforced concrete and ultra-high performance concrete;industrial ground floors; prefabrication systems; BIM in construction - characteristics, application possibilities.

Projects/seminars :execution of projects related to energy certification of buildings and BIM modeling.

Teaching methods

Lecture: multimedia presentation + films from the implementation of selected objects.

Projects/seminars:multimedia presentation + calculations and models for given buildings.

Bibliography

Basic

1. Bungale S.Taranath :Tall Building Design.CRC Press,Taylor & francis , 2017.

2. Concrete industrial ground floors - A guide to design and construction.Concrete Society Technical Report No. 34.Third Edition

3. Joan-Lluís Zamora i Mestre – Architect (DArch).Institut de Tecnologia de la Construcció de Catalunya (ITeC) (Institute of Construction Technology, Catalonia: DESIGN OF LIGHTWEIGHT FAÇADES.Architectural Project Introduction Handbook.

4. A. Borrmann et al., Building Information Modeling - technology foundations and industry practise, Springer International Publishing, 2018

5. Owens G.W., Steel Designers' Manual, 6th Edition, Blackwell, 2008

Additional

1. ACI,.Building Code Requirements for Structural Concret,(ACI.318- 08)and Commentary,.Farmington.Hills,. MI:.American.Concrete.Institute,.2008.

[2] Richard P, Cheyrezy M. Reactive powder concretes with high ductility and 200-800 MPa compressive strength. ACI Mater J 1994; 144 (3): 507-518.

[3] Richard P, Cheyrezy M. Composition of reactive powder concretes. Cem Concr Res 1995; 25(7): 1501-1511.

[4]De Larrard F, Sedran T. Optimization of ultra-high-performance concrete by the use of a packing model. Cem Concr Res 1994;24(6): 997-1009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,0
Classes requiring direct contact with the teacher	60	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	30	1,0

[1] delete or add other activities as appropriate