COURSE DESCRIPTION CARD - SYLLABUS

Course name
Building Egineering

Course

Field of study

Year/Semester
2/3

Area of study (specialization)
Budownictwo zrównoważone / SBE

Profile of study
general academic

Level of study
First-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

Projects/seminars
30

Number of credit points
4

Lecturers

Responsible for the course/lecturer:
dr inż. Marlena KUCZ

email: marlena.kucz@put.poznan.pl

tel. 616652864

WILIT Piotrowo 5, Ponań

Responsible for the course/lecturer:
dr inż. Monika SIEWCZYŃSKA

email: monika.siewczynska@put.poznan.pl

tel. 616652864

WILIT Piotrowo 5, Poznań

Prerequisites

- basic knowledge in mathematics, physics, chemistry

- basic knowledge of building and installation materials

- knowledge of CAD, technical drawing

Course objective

The aim of the course is to provide knowledge about building systems and the ability to apply technical regulations (Technical conditions) and criteria for the selection of structural elements and insulation in buildings.

Course-related learning outcomes

Knowledge

1. have advanced knowledge of the principles of descriptive geometry and technical drawing, recording and reading architectural drawings, construction maps and geodetic maps, as well as the methods of preparing the maps both traditionally and using the Building Information Modelling (BIM) technology. -

2. know building legislation, Polish standards (PN) and European standards (EN), technical conditions of constructing building facilities, as well as basic ideas and rules in the field of intellectual and industrial property protection.

3. know the rules of constructing and analysing civil engineering, low-energy, passive, sustainable, industrial, road, bridge, and railroad transport units.

4. know basic processes of building units life cycle and methods for the evaluation of their technical condition and maintenance.]

Skills

1. can classify buildings building structures

2. are able to use modern software supporting the design decisions in building engineering, including programs based on the BIM technology; are able to critically estimate the results of numerical analysis of building facilities.

3. are able to read and interpret architectural, building, installation and geodetic drawings, prepare graphic documentation in a traditional way and using selected CAD software (including the BIM technology).

4. can apply the building law regulations and legal documents concerning building facilities.

5. can make plans autonomously and carry out the lifelong learning processes; can apply the obtained knowledge in the field of building engineering in order to communicate with the surroundings using specialized terminology, and discuss important problems of building industry

Social competences

1. take responsibility for the accuracy and reliability of work results and their interpretation

2. are ready to autonomously complete and broaden knowledge in the field of modern processes and technologies of building engineering.

3. understand that it is necessary to protect the intellectual property, are ready to obey the principles of professional ethics and to take care of the achievements and traditions of the engineer?s profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Evaluation of lectures - Written exam open-ended questions (about 10 questions), minimum 50% for credit

Scale of marks:

100-91% - 5,0; 90-81% - 4,5; 80-71% - 4,0; 70-61% - 3,5; 60-50% - 3,0; ?49 - 2,0

Evaluation of projects

R - Drawing part + technical description (60%)

K - Colloquium on knowledge about Technical conditions (40%)

Mark = 0,6 R + 0,4K

Scale of marks:

100-91% - 5,0; 90-81% - 4,5; 80-71% - 4,0; 70-61% - 3,5; 60-50% - 3,0; 49% - 2,0

Programme content

Describe the composition, production and characteristics of the most common building materials with a main focus on concrete, wood and steel

Describe different structural bearing systems, their design and primary functions.

Identify the building's structural bearing framework, the non structural parts, coverings, fittings and equipment and related functions.

Account for soil work and different foundation methods and design various types of ground, wall, ceiling and slabs and floor structures.

Account for the effect of moisture and water in different phases on building materials and construction parts.

Account for requirements on sound isolation and fire protection.

Carry out simple sketches for designs, facades, sections and detail drawings.

Carry out simple calculations for thermal insulation.

Soil work and foundation methods.

Heat and sound insulation as well as moisture and fire protections.

General concepts about residential buildings' components and the design of a thermal envelope.

Project;

The building project prepared as part of the course will be used

from Architectural designing with elements of BIM I

A study containing:

Technical construction description

Calculation of the heat transfer coefficient for the external wall, roof and floor on the ground

Structural calculations of a ribbed beam ceiling

Drawings of the ceiling structure, rafter framing and foundations as well as the detail of the structural connection of the selected element

Teaching methods

lectures:

information lecture, lecture with multimedia presentation

Design:

project method, workshop method

Teaching methods

lectures - informative lecture, lecture with multimedia presentation

Project - project method, workshop method

Bibliography

Basic

Kucz Marlena Materiały dydaktyczne przygotowane w języku angielskim, udostępnione poprzez platformę MOODLE w języki angielskim (wykłady) - udostępnione Studentom przed zajęciami.

Siewczyńska Monika, Materiały dydaktyczne przygotowane w języku angielskim, udostępnione poprzez platformę MOODLE w języki angielskim (wykłady) - udostępnione Studentom przed zajęciami.

1. Siewczyńska Monika: Domy jednorodzinne. Przewodnik do ćwiczeń projektowych z Budownictwa Ogólnego, ISBN: 978-83-0119-509-0,Wydawnictwo Naukowe PWN, 2017, Wydanie: 1

2. KotulaIwona, StadnickaJustyna: How to build a house: a construction English reader, ISBN 978-83-7880-050-7, Wydawnictwo Politechniki Śląskiej, 2013

3. Ewy Anna, Jarczyk Anna, Sieńko Marta: English for building materials engineering, ISBN: 978-83-7464-690-1, Wydawnictwo Akademia Górniczo ? Hutnicza, 2014

4. Francis D.K. Ching: Building Construction Illustrated, ISBN13 (EAN): 978-1-118-45834-1, ISBN10: 1118458346, Wydawca: Wiley, 2014

5. Francis D.K. Ching, Mark Mulville: Europeanbuildingconstructionillustrated, ISBN: 978-1-119-95317-3, Wydawca: Wiley, 2014

6. Obowiązujące normy i rozporządzenia - podawane na bieżąco.

7. Rozporządzenie Ministra Infrastruktury w sprawie warunków techniczne, jakim powinny odpowiadać budynki i ich usytuowanie - tekst ujednolicony

Additional

1. Schabowicz Krzysztof, Gorzelańczyk Tomasz: Budownictwo ogólne Podstawy projektowania i obliczania budynków, ISBN: 978-83-7125-269-3, Wydawnictwo: Dolnośląskie Wydawnictwo Edukacyjne, 2017

2. Kucz Marlena.: Język angielski zawodowy w budownictwie. Zeszyt ćwiczeń, WSIP 2013

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	4,0
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]	60	2,0

[1] delete or add other activities as appropriate