COURSE DESCRIPTION CARD - SYLLABUS

Course name
Masonry structures [S1BZ1E>KM]

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
elective

Number of hours

Lecture
10

Laboratory classes
0

Other (e.g. online)
0

Tutorials
30

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

A student beginning this course should have basic knowledge of mathematics, basic mechanics and building materials. The student should have skills in performing calculations of tasks in physics and using available sources of information.

Course objective

To provide students with basic knowledge of masonry constructions, including: construction, nature of construction work and dimensioning principles. Developing in students the skills of dimensioning of masonry structures.

Course-related learning outcomes

Knowledge:
1. Student knows the rules of construction and dimensioning of elements and connections of masonry structures
2. Student knows the most common building materials (in masonry constructions) and assembly rules

Skills:

1. Student is able to calculate a set of loads acting on buildings
2. Student is able to design selected elements and simple masonry constructions
3. Student is able to use selected computer programs to support design decisions in sustainable construction

Social competences:
1. Student is responsible for the integrity of his work and its interpretation

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The knowledge acquired during the lectures is verified by two 45-minute colloquia carried out during the 7th and 15th lectures. Each of the colloquia consists of 5-10 questions (test or open), differently scored. The credit threshold: 50% of points. The lectures outlines on the basis of which the questions are developed will be sent to students via e-mail using the university"s e-mail system.
In the case of e-learning, it is possible to change the method of passing the lectures in quizzes - after each lecture. The points obtained from the individual quizzes are added up and the final grade is determined on their basis.
Maximum number of points for each quiz: 3 points.
Number of quizzes: 7
Scoring - evaluation:
20-21 - 5,0
18-19 - 4,5
16-17 - 4,0
14-15 - 3,5
12-13 - 3,0
0-11 - 2,0
The skills acquired during the seminars are verified on the basis of the current verification of the correctness of calculations carried out in the exercise booklet (pass threshold - correctly performed calculations for the simplified method - grade 3.0, additionally for the detailed method - grade 4.0, additionally for the "joined" method - evaluation 5.0) and presentation of the results obtained (possibility to increase the evaluation)

Programme content

Lectures:
History of masonry structures
Types of masonry structures: walls, arches, vaults, column and beam structures
Characteristics of masonry construction elements in the past and today: masonry elements, mortars
Masonry construction systems: cellular concrete, silicates, ceramics, clinker facades, reinforced brickwork
Building loads according to PN and EC: steady, imposed and snow loads
Building loads according to PN and EC: wind loads, load"s combinations
Design of unreinforced masonry structures according to EC: mainly vertically loaded
Design of unreinforced masonry structures according to EC: simplified dimensioning methods, design of structures loaded with concentrated force. Structural requirements of masonry structures
Damage of masonry structures: principles of expertise, diagnostic methods
Repair methods of masonry structures: eliminating causes, changing the spatial stiffness of the building, reproducing the original technical condition, interfering with the static working pattern of the structure
Tutorials:
Verification of the resistance of the masonry pillar - calculations carried out (alone or in a unit) in a notebook: Siewczyńska M., Workbook for design of Masonry Structures, Wydawnictwo ApuntoPress, Poznań, 2019

Teaching methods

Lectures - informative lecture with multimedia presentation
Exercises: working with book, project and exercise methods - alone or in teams, exposition

Bibliography

Basic
1. Hendry A. W., Sinha B. P., Davies S. R., Design of masonry structures Third edition of load bearing brickwork design (internet)
2. Siewczynska M., Workbook for design of masonry structures, Wydawnictwo ApuntoPress, Poznań, 2019
3. How to design masonry structures using Eurocode 6 (pdf)
Additional
1. Hall Loretta, Historic bricks, rap air or replace, Concrete Decor and PaintPRO Magazines
2. Penazzi D., Valluzzi M.R., Saisi A., Binda I., Modena C., Repair and strengthening of historic masonry buildings in seismic areas

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	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)	30	1,00