



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Modern designing of large-area halls

Course

Field of study

Civil Engineering

Area of study (specialization)

Structure Engineering

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Number of hours

Lecture

15

Tutorials

Laboratory classes

0

Projects/seminars

15

Other (e.g. online)

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Adam Uryzaj

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WILiT

Piotrowo 5, Poznań

Responsible for the course/lecturer:

Prerequisites

Basic knowledge of the strength of materials and building mechanics

Knowledge of building structures design, including:



- collecting loads (permanent, utility, climatic)
- interpretation of the results of static calculations
- knowledge of the dimensioning of steel structures
- knowledge of the design of reinforced concrete structures

The student is able to independently carry out a static analysis of bar structures, knows how to use selected computer tools for structure analysis and design.

Course objective

Presentation of the methods and solutions used in the design of modern halls with hybrid structures - a light, steel roof made of flat steel trusses with large spans based on prefabricated reinforced concrete columns (flat roofs braced by a trapezoidal sheet covering). Acquainting students with modern methods and tools of computer structure analysis. Acquiring the ability to model tasks and efficiently carry out calculations of structures supporting the design process

Course-related learning outcomes

Knowledge

Knowledge in the field of:

- modern design of steel structures
- modern design of reinforced concrete structures
- optimization of steel structures
- optimization of reinforced concrete structures
- optimization of direct foundations

Skills

The ability to comprehensively design and optimize the construction of hybrid industrial halls and the use of computer programs such as Autodesk Robot Structural Analysis in the field of:

- static and stability analysis of rod structures
- uses advanced specialist tools to search for useful information, communication and acquiring software supporting the work of a designer and organizer of construction processes

Social competences

Awareness of the need to expand one's competences and take serious responsibility at work..

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The credit for the lecture is based on the written answer given during the last lecture. During the answer, students answer 5 questions (tasks, derivation of dependencies or in the form of a description



of the procedure). In doubtful cases, an interview to check the results achieved may be used. Passing threshold: 50% of points

During the laboratory exercises, students are assessed on an ongoing basis based on the progress of work in modeling and calculating tasks. The assessment covers each of the issued issues. Passing threshold: 50% of points

Programme content

Lecture program

- collecting loads (fixed, utility, climatic)
- execution of a computer model of a bar lattice girder
- execution of a computer model of a bar lattice replacement
- execution of a spatial computer model of a hybrid industrial hall

Teaching methods

Multimedia presentation

Bibliography

Basic

PN-EN 1990:2004+A1:2008 Eurokod 0 - Podstawy projektowania konstrukcji

PN-EN 1991 (cz.1-1:2004, cz.1-2:2006, cz.1-3:2005, cz.1-4:2008, cz.1-5:2005, cz.1-6:2007, cz.1-7:2008, cz.3:2009) Eurokod 1 - Oddziaływania na konstrukcje.

PN-EN 1992-1-2:2008, Eurokod 2 – Projektowanie konstrukcji z betonu – Część 1-2: Reguły ogólne. Projektowanie z uwagi na warunki pożarowe.

PN-EN 1992 (cz.1-1:2008, cz.1-2:2008) Eurokod 2 - Projektowanie konstrukcji z betonu.

PN-EN 1993 (cz.1-1:2006, cz.1-2:2007, cz.1-3:2008, cz.1-5:2008, cz.1-8:2006, cz.6:2009) Eurokod 3 - Projektowanie konstrukcji stalowych.

Additional

1. Kurzawa Z., Chybiński M., Projektowanie konstrukcji stalowych, Wydawnictwo PP, Poznań 2008
2. Kozłowski + zespół, Konstrukcje stalowe. Przykłady obliczeń wg PN-EN 1993-1 cz.1, cz.2., Rzeszów 2012
3. Giżejowski M., Ziółko J., Budownictwo ogólne tom 5, Arkady, Warszawa 2010



Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	20	1,0

¹ delete or add other activities as appropriate