

COURSE DESCRIPTION CARD			
The name of the course/module MECHANICS OF BUILDING 2		Code A_P_1.2_004	
Main field of study ARCHITECTURE		Educational profile (general academic, practical) general academic	Year / term I/2
Specjalization -		Language of course: Polish	Course (core, elective) core
Hours Lectures: 30 Classes: 30 Laboratory - Projects / seminars: 15 classes:			Number of points 5
Level of the studies: I	Form of studies (full-time studies/part-time studies) Full-time studies and part-time studies	Educational area(s) Technical Sciences	ECTS distribution (number and %) 5 100%
Course status in the studies' program (basic, directional, other) Basic		(general academic, from a different major) -	
Lecturer responsible for course/lecturer: dr inż. arch. Anna Sygulska e-mail: anna.sygulska@put.poznan.pl Faculty of Architecture ul. Nieszawska 13C, 61-021 Poznań tel. 61 665 32 60		Lecturer: dr inż. arch. Anna Sygulska e-mail: anna.sygulska@put.poznan.pl Faculty of Architecture ul. Nieszawska 13C, 61-021 Poznań tel. 61 665 32 60	
Prerequisites defined in terms of knowledge, skills, social competences:			
1	Knowledge:	Knowledge of beams statics, frames and trusses and geometric properties of section	
2	Skills:	Calculation of reactions, share forces, normal forces and bending moments in beams and frames statically determinate. Calculation of forces in truss members statically determinate. Calculation of cross section properties – centroids, moments of inertia.	
3	Social competences:	Is aware of responsibility for carried out engineering calculations	
Objective of the course: Preparation to designing and dimensional calculation of simple and complex building constructions.			
Learning outcomes			
Knowledge:			
W01	Has knowledge of mechanics of building		AU1_W09
Skills:			
U01	can make calculations in the area of mechanics of structures, strength of materials, can prepare specification of materials		AU1_U12
Social competences:			
K01	observes the principles of professional ethics; is responsible for the reliability of the obtained results of his/her work and their interpretation		AU1_K02
K02	is aware of the importance of the solutions proposed by an architect and liability arising thereunder		AU1_K08
The evaluation methods			

2 colloquia during semester and final exam.
Formative assessment:
 Assessment of knowledge and projects implemented during classes
 Grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0
Summative assessment:
 Assessment obtained during written colloquia and exams consisting of written and oral part
 Final grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0
Positive grade for module depends on achieved by student all learning outcomes specified in the syllabus.

Course contents

Lecture:

Elastic, plastic and strength properties of structural materials. Calculation of constructions on compression and tension. Static determination and indetermination and instability and stability of constructions. Simple systems statically indeterminate. Share stresses in bolt and welded connections. Normal stress in beams and frames statically determinate. Designing of sections of beams and frames. The simultaneous bending and compression or tension. Columns with eccentric loads. Bending about two axes of beams, frames, three-hinged arches. Deflection of bending beams – differential equation of elastic curve. Calculation of deflection using Mohr's method. Buckling the slender columns – forces and buckling stresses. Calculation of beams and frames statically indeterminate using method of forces. Designing of sections.

Basic bibliography:

1. Przewłócki J., Górski J., Podstawy mechaniki budowli. „Arkady”, Warszawa 2008.
2. Pyrak S., Szulborski K. :Mechanika konstrukcji dla architektów. Przykłady obliczeń. Arkady. Warszawa 1994.
3. Litewka A., Litewka P.: Mechanika Budowli w architekturze historycznej. Wydawnictwo PP. Poznań 2006.

Supplementary bibliography:

1. Kolendowicz T.: Mechanika budowli dla architektów, wydanie II. Arkady. Warszawa 1994

The student workload

Form of activity	Hours	ECTS
Overall expenditure	157	5
Classes requiring an individual contact with teacher	83	3
Practical classes	74	2

Balance the workload of the average student

Form of activity	Number of hours
participation in lectures	30 h
participation in classes/ laboratory classes (projects)	45 h
preparation for classes/ laboratory classes	30 h
preparation to colloquium/final review	20 h
participation in consultation related to realization of learning process	5h
preparation to the exam	24 h
attendance at exam	3 h

Overall expenditure of student: **5 ECTS credits** **157 h**

As part of this specified student workload:

- activities that require direct participation of teachers:

$$30 \text{ h} + 45 \text{ h} + 5 \text{ h} + 3 \text{ h} = 83 \text{ h}$$

5 ECTS credits