

FACULTY OF ARCHITECTURE					
COURSE SYLLABUS					
Course title in Polish: Nowoczesne systemy konstrukcyjne					
Course title in English: Modern Structural Systems					
Main field of study (if applicable): Architecture					
Specialization (if applicable): -					
Profile: academic					
Level and form of studies: 1st level, full-time					
Course type: optional					
Course code: AUA000337S					
Group of courses: NO					
	Lecture	Tutorial	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)					30
Number of hours of total student workload (CNPS)					90
Form of crediting					Crediting with grade
For group of courses mark (X) final course					
Number of ECTS points					3
including number of ECTS points for practical (P) classes					1
including number of ECTS points for direct teacher-student contact (BK) classes					1

PREREQUISITES RELATED TO KNOWLEDGE, COMPETENCES AND SOCIAL SKILLS

COURSE OBJECTIVES

- C1** - Implementation of basic static schemes for structures.
C2 - Application of bar structures for roofs.
C3 - Analyzing cable nets in deferent surfaces.
C4 - Implementation of post-tension concrete structures.
C5 - Shaping geometry of suspended roofs and footbridges.
C6 - Shaping the membrane surfaces.
C7 - Creating geometry of spatial structures.
C8 - Using optimization method for modern spatial structures.

COURSE LEARNING OUTCOMES

Relating to knowledge:

PEK_W01 - Describe the main idea of shaping structures. (K1A_W04)

PEK_W02 - Describe systems of technology used in modern structures. (K1A_W04)

Relating to competences:

PEK_U01 - Calculate structures for simple structural elements. (K1A_U07)

PEK_U02 - Design a system of technology for different types of buildings. (K1A_U07)

PEK_U03 - Analyzing recent effects of researches on modern structural systems. (K1A_U08)

Relating to social skills:**PEK_K01** - Individual studies on examples of modern structures. (K1A_K01)**PEK_K02** - Technical discussion on seminar class. (K1A_K02)**PROGRAMME CONTENT**

Seminar		Number of hours
Sem 1	Constructing static schemes for structures with large spans.	2
Sem 2	Application of bar shells to the roofs of exhibition halls.	2
Sem 3	Cable covers for compressed sports facilities.	2
Sem 4	Reinforced concrete structures in industrial halls.	2
Sem 5	Examples of solutions for suspended roofs and footbridges.	2
Sem 6	Temporary exhibition facilities and canopies using membranes.	2
Sem 7	Multilayer parking lots.	2
Sem 8	Bar spatial structures, shaping and optimization.	2
Sem 9	Single-layer rod coatings, geometrical systems of meshes.	2
Sem 10	Flat cable trusses and compressed cable nets.	2
Sem 11	Hanging structures using membrane systems.	2
Sem 12	High rise buildings.	2
Sem 13	Examples of special foundation design.	2
Sem 14	Concrete thin shells coverings.	2
Sem 15	Geometrical solids in structural design.	2
Total hours		30

TEACHING TOOLS**N1** - Expository lecture with elements of problem-solving.**N2** - Multimedia presentations.**N3** - Interactive discussion about designing solutions developed during lectures and tutorials.**N4** - Preparation of an assignment in the form of a report.**ASSESSMENT OF ACHIEVEMENT OF LEARNING OUTCOMES**

Evaluation (F – forming (during semester), C – concluding (at semester end))	Number of learning outcome	Method of assessing the achievement of learning outcome
F1	PEK_W01 PEK_W02 PEK_U03	Presentation.
F2	PEK_W02 PEK_U01 PEK_U02 PEK_U03	Report.
C = 80% F1+20% F2		

BASIC AND ADDITIONAL LITERATURE
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<u>BASIC LITERATURE:</u>

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| [1] Zalewski W., Allen E., <i>Form and Forces</i> , New York 2009. |
| [2] McCormac J.C., <i>Structural Analysis: Using Classical and Matrix Methods</i> , Hoboken 2007. |
| [3] Hemp, W.S., <i>Optimum Structures</i> , Oxford 1973. |

<u>ADDITIONAL LITERATURE:</u>

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| [1] <i>Structural Morfology</i> , IASS Conference materials, Nottingham 1997. |
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COURSE SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Waldemar Bober, PhD., Eng. waldemar.bober@pwr.edu.pl
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