THE CARD OF DESCRIPTION THE EDUCATION MODULE

Name of course/module		Code
BUILDING CONSTRUCTION 2		**AU_K_1.4_005**
Main field of study **ARCHITECTURE AND URBAN PLANNING**	Education profile (general academic, practical) **general academic**	Year / Semester **II/4**
Specialization	Language of course: **Polish**	Course (core, elective) **core**
Hours Lectures: **30** Classes: **15** Laboratory classes: Projects : **15**		Number of points **4**

Level of qualification:	Form of studies (full-time studies/part-time studies)	Education area(s)	ECTS division (number and %)
I	**Full-time studies and part-time studies**	**Technical Sciences**	**2 50%** **1 25%** **1 25%**

Course status in the study program (basic, directional, other) **directional**

(general academic, from other field of study) **general academic**

Responsible for course:

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Prerequisites of knowledge, skills, social competences:

1	**Knowledge:**	- student has explicit, theoretically based knowledge including the key issues of mathematics, the theory of structures, strength of materials - student has basic knowledge of use the above mentioned sciences in practice of constructional designing in the scope of timber and steel constructions,
2	**Skills:**	- student can acquire information from publications, data bases and other sources, can interpret the said information and can integrate the acquired information, - student is able to conceptually design the structural layout in steel construction for earlier developed mass of building facility of industrial type,
3	**Social competences:**	- student understands the need for lifelong learning; can inspire and organize process of learning other people, - student is aware of the importance of non-technical aspects and effects of engineering activities, - student can work and can cooperate in a group, assuming a number of different roles therein.

Objective of the course:

- knowledge of general issues related to essence of the work and the use of reinforced concrete in building constructions,
- knowledge of work specifics, load capacity and utility of reinforced concrete constructions on the basis of designing methods,
- knowledge of basic assumptions to design the reinforced concrete constructions with the ability to use parameters contained in course publications

- the ability to implementation of course knowledge for basic structural solution in various work cases of structural elements.

Learning outcomes		
Knowledge:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning process in the area of technical sciences
W01	Student has explicit, theoretically based knowledge including the key issues of the theory of structures and strength of materials with emphasis of approach specifics to its application in solutions of reinforced concrete constructions	**AU1_W01**
W02	Student has basic knowledge of use the theory of structures, strength of materials as well practical tips from publications to structural designing in the scope of reinforced concrete constructions	**AU1_W02**
W03	Student knows the basic methods, techniques and tools used at designing process and realization of facilities in reinforced concrete constructions	**AU1_W03**
W04	has knowledge in the theory of architectural designing and urban planning	**AU1_W12**
W05	has knowledge in the scope of the theory of architecture and urban planning	**AU1_W14**
Skills:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning process in the area of technical sciences
U01	Student can acquire information from publications and data bases, can integrate the acquired information and can interpret the said information	**AU1_U01**
U02	Student is able to conceptually design the structural layout in reinforced concrete construction for various cases of building facilities	**AU1_U15**
U03	Student is able to propose optimal solution of structural task on the basis of selection of different solutions	**AU1_U08**
U04	can design the artificial lighting system in an architectural and urban interior	**AU1_U20**
U05	can select materials of respective aesthetic properties, as well as physiochemical, structural, fire-fighting and acoustic properties required for architectural designing and urban planning	**AU1_U24**
U06	can, when formulating engineering tasks and solving them, notice their social, historical, natural, economic and legal aspects and well as aspects related to landscape	**AU1_U25**
U07	is skillful in using data libraries based on CAAD software	**AU1_U26**
Social competences:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning

		process in the area of technical sciences
K01	Student understands the need for lifelong learning; can inspire and organize process of learning other people	**AU1_K01**
K02	Student can correctly identify and resolve a design problems related to use of reinforced concrete constructions	**AU1_K05**
K03	Student can think and act in an entrepreneurial and creative manner	**AU1_K06**
K04	Student is aware of the importance of non-technical aspects and effects of engineering activities	**AU1_K02**
K05	is aware of the importance of the solutions proposed by an architect and liability arising thereunder	**AU1_K08**
K06	is aware of the social and humanistic aspects of the architect's work - a profession of public trust	**AU1_K09**

Methods of check the learning outcomes:

I. <u>The credit conditions and assessment method of knowledge presented during the lectures. An important criterion of course assessment is an approach to the following issues</u>

<u>Enforcement of course assessment in the form of exam in the exam session on the basis of:</u>

a) The scope of the knowledge presented at the lectures and knowledge obtained by student should determine the course credit. In the transferred knowledge can be distinguished the following aspects: basic and general knowledge of reinforced concrete construction subject including main issues related to design.

b) The acquisition of routine in assessment of construction work in different parts of elements and facilities planned to be implemented in reinforced concrete construction.

c) Consideration in tasks in the scope of reinforced concrete constructions the use of different types of solutions depending on nature of the work.

d) The acquisition of the ability to graphic imitation the earlier analytically designed elements in the reinforced concrete construction.

e) The preliminary condition for admission to the exam are credited classes of reinforced concrete constructions and positive assessment of executed individual project of reinforced concrete construction.

<u>Summary score</u>:

Obtaining from exam the positive assessment of building construction 1.

***<u>2.</u>* <u>The credit conditions and assessment method of classes.</u>**

An important criterion of classes assessment is attendance at the classes and active participation (answer the questions) during board classes with presentation of construction analysis and graphic solutions of practical tasks in the scope of course.

Forming evaluation:

Participation of student in the course of solutions presented in the classes

***<u>3.</u>* <u>The credit conditions and assessment method of design task.</u>**

Assessment criterion of project is its implementation in graphic and computational form while maintaining appropriate form to principles of implementation of design documentation for building and executive project according to building legislation.

Forming evaluation:

Participation of student in consultations related to implementation of design task.

Summary score:
- attendance at classes and design classes with participation of seminar and consultation type.
- execution of design task with positive assessment.
- obtainment on the basis of exam the positive assessment of building constructions 2.

Course contents

1. Lecture:

- General principles of structural design. Participation of structural solutions in architectural designs.
- Loadings in structural analysis. The impact of loadings on work of various building construction.
- Introduction. General characteristics of reinforced concrete constructions.
- Physical, mechanical and timber data with classification. The stages of construction work.
- Bending the construction.
- Shearing in the construction. Axial compression and eccentric compression.
- The limit state of use. Deflections of reinforced concrete constructions.
- Reinforced concrete construction.
- Industrial halls.
- Details of executive solutions.
- Principles and stages of preparation of design documentation in the scope of reinforced concrete constructions.

2. Classes:

- Introduction. Discussion of classes topics and credit conditions.
- Principles of sections work.
- Distribution of design topics with commentary. The issues related to the adoption of structural schemas and determining loadings.
- Discussion of conditions related to reinforced concrete constructions work on bending, shearing, axial and eccentric compression.
- Discussion of principles of graphic site development (construction drawings) of projects in the scope of reinforced concrete constructions. Distribution of auxiliary materials for designing.
- Discussion of issues related to realization technology of reinforced concrete constructions.

3. Projects:

- Introduction. General discussion of topics and the scope of project.
- Acquainting with the numerical example of reinforced concrete ceiling project. Adoption of static schemas and calculation of internal forces. Adoption of sections.
- The numerical example. Construction analysis of the rib and panel.
- Finishing the numerical example. Consultations in the scope of design task development.

Basic bibliography:

- PN-B-03264 –Konstrukcje betonowe, żelbetowe i sprężone. Obliczenia statyczne i projektowanie
-Małgorzata Murkowska – Projektowanie elementów żelbetowych – Wydawnictwo Politechniki Poznańskiej
- M. Kamiński; J., Pędziwiatr, D.Styś – Projektowanie konstrukcji żelbetowych wg PN-B-03264 Dolnośląskie Wydawnictwo Edukacyjne – Wrocław 2004.

Complementary bibliography:

-Kobiak; Stachurski – Konstrukcje żelbetowe - ARKADY
- Włodzimierz Staropolski – Konstrukcje żelbetowe tom I i II według PN-B/03264; 2002 Eurpocode2

The workload of student

Form of activity	Hours	ECTS
Total workload	116	4
Activities that require individual contact with the teacher	65	2
Activities of practical	51	-

Balance the workload of the average student

Form of activity	Number of hours
participation in lectures	30 h
participation in classes and projects	15 + 15 = 30 h
preparation for classes	15 x 1 h = 15 h
participation in consultation of design task	3 h
develop of the design task	12h
preparation to the exam	24 h
attendance at exam	2 h

Total workload of student: 4 **ECTS credits** **116 h**

As part of this specified student workload

- activities that require direct participation of teachers:

30 h + 30h + 3h + 2h = **65h** 2 **ECTS credits**