

POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOŚCIUSZKI

KARTA PRZEDMIOTU

obowiązuje studentów rozpoczynających studia w roku akademickim 2013/2014

Wydział Architektury

Kierunek studiów: Architektura

Profil: Ogólnoakademicki

Forma studiów: stacjonarne

Kod kierunku: AiU

Stopień studiów: II

Specjalności: Master Degree in Architecture in English

1 INFORMACJE O PRZEDMIOCIE

NAZWA PRZEDMIOTU	Building structures
NAZWA PRZEDMIOTU W JĘZYKU ANGIELSKIM	Building structures
KOD PRZEDMIOTU	WA AU oIIS C4 13/14
KATEGORIA PRZEDMIOTU	przedmioty kierunkowe
LICZBA PUNKTÓW ECTS	4.00
SEMESTRY	1 2

2 RODZAJ ZAJĘĆ, LICZBA GODZIN W PLANIE STUDIÓW

SEMESTR	WYKŁADY	ĆWICZENIA	SEMINARIA	LABORATORIA	PROJEKTY	PRAKTYKI
1	15	0	15	0	0	0
2	15	0	15	0	0	0

3 CELE PRZEDMIOTU

Cel 1 Getting students acquainted with great span structures, tensile structures, high building structures and modern technologies for protecting deep excavation. Use of composite materials in modern structures.

Cel 2 Guidelines for evaluation of the technical condition of existing building. Law basis of the technical evaluation. Technical basis of building revitalization.

Cel 3 Structural problems in protecting and renovation of historical buildings. Historical masonry structures, vaults and timber floors. Methods of examining, protecting and adaptation for new use.

4 WYMAGANIA WSTĘPNE W ZAKRESIE WIEDZY, UMIEJĘTNOŚCI I INNYCH KOMPETENCJI

1 Knowledge of basis of Building Mechanics and ability to design and evaluate commonly used structural solutions in civil and industrial building.

5 EFEKTY KSZTAŁCENIA

EK1 Wiedza Knowledge of current law as stated in Eurocodes (1 to 7) concerning structural designing. Law and instructions concerning great span structures, protecting deep excavation and evaluation of the technical condition of existing building.

EK2 Umiejętności Ability to design reinforced concrete, steel, timber and masonry load-bearing structures and prepare specification for building works in accordance with Eurocodes. Ability to design great span structures and high buildings structures. Ability to make evaluation of the technical condition of existing building.

EK3 Wiedza History of development of building technologies. Ancient Roman building as the prototype of European building styles. Historical models of load-bearing structures of walls, vaults and rafter framings.

EK4 Umiejętności Ability to evaluate the condition of historical brick and stone buildings. Ability to design and implement structural protection of historical buildings in accordance with conservation rules.

6 TREŚCI PROGRAMOWE

WYKŁADY		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BŁOKÓW TEMATYCZNYCH	LICZBA GODZIN
W1	The Eurocodes - set of European Standards (EN) for the design of buildings. Concrete (Eurocode 2), timber (Eurocode 5) and masonry structures (Eurocode 6). Basic information for a design. Choice of materials. Changes introduced in Eurocodes recently. Principles of designing carrying systems and making technical specification in accordance with Eurocodes.	2
W2	Structural systems of high buildings. Principles of assuring spatial rigidity of high buildings. Examples of high buildings from the world and from Poland. High buildings designed by means of combined form of structural system (by Prof. J. Rębielak).	2
W3	Structures of high span roofs. Designing of tensile and membrane structures.	2
W4	Principles of designing and building temporary modern structures. Pneumatic (air-supported) structures. Light-weight structures. Tensegrity structures.	2
W5	Designing of the foundation in the proximity of existing buildings. Principles of deep excavation in contact with existing buildings.	2
W6	Contemporary methods of reinforcing the foundation. Retaining walls. Stabilization of slopes.	2

WYKŁADY		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
W7	Structural problems in revitalization of urban aggregates.	2
W8	Basis of evaluating technical condition of building. Contemporary non-destructive testing reinforced concrete, steel and timber structures.	2
W9	Structural problems of historical buildings conservation. History of masonry building development. Building materials and structures during Roman, Gothic, Renaissance and Baroque periods.	2
W10	Historical layer walls. Methods of testing. Designing of reinforcement in accordance with German WTA instruction.	2
W11	Systematics of cracks origin in historical masonry buildings. Examples of cracks distribution.	2
W12	Methods of reinforcing historical walls with cracks. Application of composite materials and injection with cement modified grout.	2
W13	Corrosion of masonry structures. Corrosion due to humidity and soluble salts. Methods of protecting walls against corrosion.	2
W14	Systematics and origin of vault damage. Methods of reinforcing and protecting in accordance with conservatory rules.	2
W15	Historical timber structures. Systematics of damage and methods of reinforcing framework structures. Historical timber floors. Historical rafter framings. Methods of testing and evaluating historical rafter framing. Methods of protection.	2

SEMINARIA		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
S1	Principles of designing contemporary masonry structures. Examples of mistakes which may significantly reduce the compressive strength of masonry and cause serious danger for structure.	2
S2	Principles of designing vertical bracing in high buildings.	2
S3	Protecting of deep excavation in the proximity of existing buildings. Examples of practical solutions. Slurry walls and palisades of CFA piles.	2
S4	Examples of timber roofs. Preliminary design of timber cover of a yard. Comparison of three versions of the main roof girder made of glued laminated timber. Calculations.	2
S5	Designing of great span roofs. Example of calculation of tensile roof with membrane covering.	2

SEMINARIA		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
S6	An example calculation illustrating the choice of exchangeable masonry units (different group, different dimensions).	2
S7	Cracks origin in masonry buildings. Examples of cracks distribution.	2
S8	Excursion to the building site to see stages of execution the slurry wall.	2
S9	Principles and range of periodic evaluation of the technical condition of existing building. Example of final report of survey. Guidelines for a written task.	2
S10	Methods of investigating and reinforcing historical masonry structures. Composite reinforcement systems. Examples.	2
S11	Historical rafter framings. Discussing causes of typical damage. Designs of repair and conservation.	2
S12	Historical brick vaults. Discussing forms of damage and their causes. Preservation of historical vaults against deformation caused by thrust forces.	2
S13	Reinforcing historical layer walls by injection and transverse anchorage. An example calculation.	2
S14	Influence of the depth of foundation on the carrying capacity. An example calculation of changing foundation after deepening the cellars.	2
S15	Examples of reinforcing historical beam floors.	2

7 NARZĘDZIA DYDAKTYCZNE

N1 Wykłady

N2 Prezentacje multimedialne

N3 Ćwiczenia projektowe

N4 Konsultacje

8 OBCIĄŻENIE PRACĄ STUDENTA

FORMA AKTYWNOŚCI	ŚREDNIA LICZBA GODZIN NA ZREALIZOWANIE AKTYWNOŚCI
Godziny kontaktowe z nauczycielem akademickim, w tym:	
Godziny wynikające z planu studiów	0
Konsultacje przedmiotowe	10
Egzaminy i zaliczenia w sesji	10
Godziny bez udziału nauczyciela akademickiego wynikające z nakładu pracy studenta, w tym:	
Przygotowanie się do zajęć, w tym studiowanie zalecanej literatury	15
Opracowanie wyników	10
Przygotowanie raportu, projektu, prezentacji, dyskusji	15
SUMARYCZNA LICZBA GODZIN DLA PRZEDMIOTU WYNIKAJĄCA Z CAŁEGO NAKŁADU PRACY STUDENTA	60
SUMARYCZNA LICZBA PUNKTÓW ECTS DLA PRZEDMIOTU	4.00

9 SPOSOBY OCENY

OCENA FORMUJĄCA

F1 Kolokwium

F2 Ćwiczenie praktyczne

OCENA PODSUMOWUJĄCA

P1 Egzamin pisemny

P2 Egzamin ustny

OCENA AKTYWNOŚCI BEZ UDZIAŁU NAUCZYCIELA

B1 Ćwiczenie praktyczne

KRYTERIA OCENY

EFEKT KSZTAŁCENIA 1	
NA OCENĘ 3.0	Student has general knowledge of taught subjects.
NA OCENĘ 3.5	Student has general knowledge of taught subjects and its practical application in designing.

NA OCENĘ 4.0	Student has good knowledge of taught subjects and is able to apply acquired principles in designing.
NA OCENĘ 4.5	Student has very good knowledge of taught subjects and is able to discuss and apply acquired principles in designing.
NA OCENĘ 5.0	Student has excellent knowledge of taught subjects and is able to compare different solutions and draw own conclusions.
EFEKT KSZTAŁCENIA 2	
NA OCENĘ 3.0	Student has fulfilled all requirements for credit. Student has general knowledge of taught subjects.
NA OCENĘ 3.5	Student has fulfilled all requirements for credit and obtained satisfactory grades. Student has general knowledge of taught subjects and its practical application in designing.
NA OCENĘ 4.0	Student has fulfilled all requirements for credit and obtained good grades. Student has good knowledge of taught subjects and is able to apply acquired principles in designing.
NA OCENĘ 4.5	Student has fulfilled all requirements for credit and obtained very good grades. Student has very good knowledge of taught subjects and is able to discuss and apply acquired principles in designing.
NA OCENĘ 5.0	Student has fulfilled all requirements for credit and obtained excellent grades. Student has excellent knowledge of taught subjects and is able to compare different solutions and draw own conclusions.
EFEKT KSZTAŁCENIA 3	
NA OCENĘ 3.0	Student has general knowledge of taught subjects.
NA OCENĘ 3.5	Student has general knowledge of taught subjects and its practical application in designing.
NA OCENĘ 4.0	Student has good knowledge of taught subjects and is able to apply acquired principles in designing.
NA OCENĘ 4.5	Student has very good knowledge of taught subjects and is able to discuss and apply acquired principles in designing.
NA OCENĘ 5.0	Student has excellent knowledge of taught subjects and is able to compare different solutions and draw own conclusions.
EFEKT KSZTAŁCENIA 4	
NA OCENĘ 3.0	Student has fulfilled all requirements for credit. Student has general knowledge of taught subjects.
NA OCENĘ 3.5	Student has fulfilled all requirements for credit and obtained satisfactory grades. Student has general knowledge of taught subjects and its practical application in designing.

NA OCENĘ 4.0	Student has fulfilled all requirements for credit and obtained good grades. Student has good knowledge of taught subjects and is able to apply acquired principles in designing.
NA OCENĘ 4.5	Student has fulfilled all requirements for credit and obtained very good grades. Student has very good knowledge of taught subjects and is able to discuss and apply acquired principles in designing.
NA OCENĘ 5.0	Student has fulfilled all requirements for credit and obtained excellent grades. Student has excellent knowledge of taught subjects and is able to compare different solutions and draw own conclusions.

10 MACIERZ REALIZACJI PRZEDMIOTU

EFEKT KSZTAŁCENIA	ODNIESIENIE DANEGO EFEKTU DO SZCZEGÓŁOWYCH EFEKTÓW ZDEFINIOWANYCH DLA PROGRAMU	CELE PRZEDMIOTU	TREŚCI PROGRAMOWE	NARZĘDZIA DYDAKTYCZNE	SPOSOBY OCENY
EK1	GC8, GC9	Cel 1 Cel 2	W1 W2 W3 W4 W5 W6 W7 W8 S1 S2 S3 S4 S5 S6 S7 S8 S9	N1 N2 N3 N4	F1 F2 P1 P2
EK2	GC8, GC9	Cel 1 Cel 2	W1 W2 W3 W4 W5 W6 W7 W8 S1 S2 S3 S4 S5 S6 S7 S8 S9	N1 N2 N3 N4	F1 F2 P1 P2
EK3	GC8, GC9	Cel 3	W9 W10 W11 W12 W13 W14 W15 S10 S11 S12 S13 S14 S15	N1 N2 N3 N4	F1 F2 P1 P2
EK4	GC8, GC9	Cel 3	W9 W10 W11 W12 W13 W14 W15 S10 S11 S12 S13 S14 S15	N1 N2 N3 N4	F1 F2 P1 P2

11 WYKAZ LITERATURY

LITERATURA PODSTAWOWA

- [1] | W.Borusiewicz — *Konserwacja zabytków budownictwa murowanego*, Warszawa, 1985, Arkady
- [2] | C.Siegel — *Formy strukturalne w nowoczesnej architekturze*, Warszawa, 1974, Arkady

[3] | E.Schild — *Słabe miejsca w budynkach*, Warszawa, 1982, Arkady

[4] | A.Mitzel — *Awarie konstrukcji betonowych i murowych*, Warszawa, 1982, Arkady

LITERATURA DODATKOWA

[1] | Eurocodes 1-7

12 INFORMACJE O NAUCZYCIELACH AKADEMICKICH

OSOBA ODPOWIEDZIALNA ZA KARTĘ

dr inż. arch. Stanisław Jurczakiewicz (kontakt: sjurczakiewicz@pk.edu.pl)

OSOBY PROWADZĄCE PRZEDMIOT

1 mgr inż. Stanisław Jurczakiewicz (kontakt: just@bci.pl)

13 ZATWIERDZENIE KARTY PRZEDMIOTU DO REALIZACJI

(miejscowość, data)

(odpowiedzialny za przedmiot)

(dziekan)

PRZYJMUJĘ DO REALIZACJI (data i podpisy osób prowadzących przedmiot)

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