

POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOŚCIUSZKI

KARTA PRZEDMIOTU

obowiązuje studentów rozpoczynających studia w roku akademickim 2021/2022

Wydział Inżynierii Lądowej

Kierunek studiów: Budownictwo

Profil: Ogólnoakademicki

Forma studiów: stacjonarne

Kod kierunku: BUD

Stopień studiów: I

Specjalności: Bez specjalności - studia w języku angielskim

1 INFORMACJE O PRZEDMIOCIE

NAZWA PRZEDMIOTU	Technologia konstrukcji sprężonych i prefabrykowanych
NAZWA PRZEDMIOTU W JĘZYKU ANGIELSKIM	Technology of Prestressed and Precast Constructions
KOD PRZEDMIOTU	WIL BUD oIS D56 21/22
KATEGORIA PRZEDMIOTU	Przedmioty profilowe
LICZBA PUNKTÓW ECTS	2.00
SEMESTRY	6

2 RODZAJ ZAJĘĆ, LICZBA GODZIN W PLANIE STUDIÓW

SEMESTR	WYKŁAD	ĆWICZENIA AUDYTORYJNE	LABORATORIA	LABORATORIA KOMPUTERO- WE	PROJEKTY	SEMINARIUM
6	15	0	0	0	15	0

3 CELE PRZEDMIOTU

Cel 1 Provide basic knowledge on the concept of prestressing, advantages and requirements

Cel 2 Provide a fundamental knowledge on the design and production procedures of PC members

Cel 3 Provide basic knowledge on the technology of precast structures

Cel 4 Provide fundamental information on the production of precast members

4 WYMAGANIA WSTĘPNE W ZAKRESIE WIEDZY, UMIEJĘTNOŚCI I INNYCH KOMPETENCJI

- 1 Must be previously completed: Structural mechanics
- 2 Must be previously completed: Resistance of materials
- 3 Must be previously completed: Technical drawing and computer graphics
- 4 Must be previously completed: Building materials
- 5 Must be previously completed: Concrete technology
- 6 Must be previously completed: Concrete structures

5 EFEKTY KSZTAŁCENIA

EK1 Wiedza Knowledge of the principal features of the prestressed and precast elements and structures

EK2 Wiedza Knowledge of materials, equipment, conditions of works execution and detailing

EK3 Umiejętności Ability of simplified verification of the limit states

EK4 Umiejętności Ability of the formulation of connection models for precast members

EK5 Kompetencje społeczne Awareness of the responsibility of the designer and constructor of prestressed and precast concrete structures

6 TREŚCI PROGRAMOWE

WYKŁAD		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BŁOKÓW TEMATYCZNYCH	LICZBA GODZIN
W1	Concept of prestressing, advantages and disadvantages, pre-tensioning and post-tensioning, requirements, examples of PC structures	2
W2	Materials and technology of prestressing, anchorages	2
W3	Losses of the prestressing force, their relation to technology, simplified design stress equations for edges	2
W4	Stress verification in materials, ultimate limit states, serviceability limit states,	2
W5	Design and construction of anchorage and end zones, technology of grouting	2
W6	Concept of precast members structures, examples, concept of typization,	2
W7	Design and technology of production of precast members load situations for slabs, beams, columns, foundations	2
W8	Design and technology of connections execution	1

PROJEKTY		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
P1	Design of a precast element of a simply supported beam or slab with special focus on technology of production	15

7 NARZĘDZIA DYDAKTYCZNE

N1 Lectures

N2 Discussion

N3 Multimedia presentations

N4 Practical design

8 OBCIĄŻENIE PRACĄ STUDENTA

FORMA AKTYWNOŚCI	ŚREDNIA LICZBA GODZIN NA ZREALIZOWANIE AKTYWNOŚCI
Godziny kontaktowe z nauczycielem akademickim, w tym:	
Godziny wynikające z planu studiów	30
Konsultacje przedmiotowe	5
Egzaminy i zaliczenia w sesji	5
Godziny bez udziału nauczyciela akademickiego wynikające z nakładu pracy studenta, w tym:	
Przygotowanie się do zajęć, w tym studiowanie zalecanej literatury	5
Opracowanie wyników	0
Przygotowanie raportu, projektu, prezentacji, dyskusji	15
SUMARYCZNA LICZBA GODZIN DLA PRZEDMIOTU WYNIKAJĄCA Z CAŁEGO NAKŁADU PRACY STUDENTA	60
SUMARYCZNA LICZBA PUNKTÓW ECTS DLA PRZEDMIOTU	2.00

9 SPOSOBY OCENY

OCENA FORMUJĄCA

F1 Projekt indywidualny

F2 Test

F3 Kolokwium

OCENA PODSUMOWUJĄCA**P1** Średnia ważona ocen formujących**WARUNKI ZALICZENIA PRZEDMIOTU****W1** All midterm parts of the project must be approved in time, all midterm tests must be passed before the termination of the lectures period in order to qualify for the final exam**W2** The written exam consists of two parts: theoretical test and design problems to solve**KRYTERIA OCENY**

EFEKT KSZTAŁCENIA 1	
NA OCENĘ 2.0	Student does not know the basic information on the principal features of the prestressed elements and structures and does not reach the minimum of results required for the note 3.0
NA OCENĘ 3.0	Student knows the basic information on the principal features of the prestressed elements and structures and reaches the minimum of results required for the note 3.0
NA OCENĘ 3.5	Student knows the information on the principal features of the prestressed elements and structures and reaches the minimum of results required for the note 3.5
NA OCENĘ 4.0	Student knows well the information on the principal features of the prestressed elements and structures and reaches the minimum of results required for the note 4.0
NA OCENĘ 4.5	Student knows better than well the information on the principal features of the prestressed elements and structures and reaches the minimum of results required for the note 4.5
NA OCENĘ 5.0	Student knows very well the information on the principal features of the prestressed elements and structures and reaches the minimum of results required for the note 5.0
EFEKT KSZTAŁCENIA 2	
NA OCENĘ 2.0	Student does not know the basic information on the materials, equipment, conditions of works execution and detailing and does not reach the minimum of results required for the note 3.0
NA OCENĘ 3.0	Student knows the basic information on the materials, equipment, conditions of works execution and detailing and reaches the minimum of results required for the note 3.0
NA OCENĘ 3.5	Student knows the information on the materials, equipment, conditions of works execution and detailing and reaches the minimum of results required for the note 3.5
NA OCENĘ 4.0	Student knows well the information on the materials, equipment, conditions of works execution and detailing and reaches the minimum of results required for the note 4.0

NA OCENĘ 4.5	Student knows better than well the information on the materials, equipment, conditions of works execution and detailing and reaches the minimum of results required for the note 4.5
NA OCENĘ 5.0	Student knows very well the information on the materials, equipment, conditions of works execution and detailing and reaches the minimum of results required for the note 5.0
EFEKT KSZTAŁCENIA 3	
NA OCENĘ 2.0	Student is not able to carry out the basic verification of the limit states and does not reach the minimum of results required for the note 3.0
NA OCENĘ 3.0	Student is able to carry out the basic verification of the limit states and reaches the minimum of results required for the note 3.0
NA OCENĘ 3.5	Student is able to carry out the verification of the limit states and reaches the minimum of results required for the note 3.5
NA OCENĘ 4.0	Student is able to carry out well the verification of the limit states and reaches the minimum of results required for the note 4.0
NA OCENĘ 4.5	Student is able to carry out better than well the verification of the limit states and reaches the minimum of results required for the note 4.5
NA OCENĘ 5.0	Student is able to carry out very well the verification of the limit states and reaches the minimum of results required for the note 5.0
EFEKT KSZTAŁCENIA 4	
NA OCENĘ 2.0	Student is not able to formulate the basic connection models for precast members and does not reach the minimum of results required for the note 3.0
NA OCENĘ 3.0	Student is able to formulate the basic connection models for precast members and reaches the minimum of results required for the note 3.0
NA OCENĘ 3.5	Student is able to formulate the connection models for precast members and reaches the minimum of results required for the note 3.5
NA OCENĘ 4.0	Student is able to formulate well the connection models for precast members and reaches the minimum of results required for the note 4.0
NA OCENĘ 4.5	Student is able to formulate better than well the connection models for precast members and reaches the minimum of results required for the note 4.5
NA OCENĘ 5.0	Student is able to formulate very well the connection models for precast members and reaches the minimum of results required for the note 5.0
EFEKT KSZTAŁCENIA 5	
NA OCENĘ 2.0	Student is not aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and does not reach the minimum of results required for the note 3.0

NA OCENĘ 3.0	Student is basically aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and reaches the minimum of results required for the note 3.0
NA OCENĘ 3.5	Student is aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and reaches the minimum of results required for the note 3.5
NA OCENĘ 4.0	Student is well aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and reaches the minimum of results required for the note 4.0
NA OCENĘ 4.5	Student is better than well aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and reaches the minimum of results required for the note 4.5
NA OCENĘ 5.0	Student is very well aware of the responsibility of the designer and constructor of prestressed and precast concrete structures and reaches the minimum of results required for the note 5.0

10 MACIERZ REALIZACJI PRZEDMIOTU

EFEKT KSZTAŁCENIA	ODNIESIENIE DANEGO EFEKTU DO SZCZEGÓŁOWYCH EFEKTÓW ZDEFINIOWANYCH DLA PROGRAMU	CELE PRZEDMIOTU	TREŚCI PROGRAMOWE	NARZĘDZIA DYDAKTYCZNE	SPOSOBY OCENY
EK1	K_W14	Cel 1 Cel 3 Cel 4	w1 w6	N1 N2 N3	F3 P1
EK2	K_W07 K_W12	Cel 1	w2	N1 N2 N3	F3 P1
EK3	K_U07 K_U08	Cel 2	w3 w4 w5 p1	N4	F1 F2 F3 P1
EK4	K_U07 K_U08	Cel 3	w7 w8	N1 N3	F2 F3 P1
EK5	K_K02	Cel 2 Cel 4	w1 w4	N1 N3	F3 P1

11 WYKAZ LITERATURY

LITERATURA PODSTAWOWA

[1] | A. Ajdukiewicz, J. Mames — *Konstrukcje z betonu sprężonego*, Kraków, 2004, Polski Cement

- [2] | **E. G. Nawy** — *Prestressed concrete: A fundamental approach*, New Jersey, 2009, Prentice-Hall International Series in Civil Engineering and Engineering Mechanics
- [3] | **A. E. Naaman** — *Prestressed Concrete Analysis and Design: Fundamentals*, Ann Arbor, 2012, Technopress 3000
- [4] | **A. Stachowicz, W. Ziobroń** — *Podziemne zbiorniki wodociągowe*, Warszawa, 1986, Arkady

LITERATURA UZUPEŁNIAJĄCA

- [1] | **Czasopisma** — *ACI Journal, Materials and Structures, Structural Concrete, Inżynieria i Budownictwo, Mosty*, Miejscowość, 2019, Wydawnictwo

12 INFORMACJE O NAUCZYCIELACH AKADEMICKICH

OSOBA ODPOWIEDZIALNA ZA KARTĘ

dr inż. Piotr Gwoździewicz (kontakt: pgwozdziewicz@pk.edu.pl)

OSOBY PROWADZĄCE PRZEDMIOT

- 1 dr inż. Piotr Gwoździewicz (kontakt: pgwozdziewicz@pk.edu.pl)
- 2 dr hab. inż., Prof. PK Wit Derkowski (kontakt: derkowski@pk.edu.pl)
- 3 dr hab. inż. Rafał Szydłowski (kontakt: rszydowski@pk.edu.pl)
- 4 mgr inż. Łukasz Ślaga (kontakt: lslaga@pk.edu.pl)
- 5 mgr inż. Rafał Walczak (kontakt: rafal.walczak@pk.edu.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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