

KARTA PRZEDMIOTU DLA NABORU 2022/2023
FORMA STUDIÓW: STACJONARNA

INFORMACJE OGÓLNE

1. Nazwa przedmiotu: Concrete structures II

2. Nazwa kierunku Civil Engineering

3. Poziom kształcenia Bachelors degree

4. Liczba punktów ECTS 3

5. Liczba godzin w semestrze

semestr	w	ćw	lab/lek	prj/zp	pws	prk
6	15			30		

6. Język wykładowy English

7. Wykładowca dr hab inż. Barbara Sadowska-Buraczewska

INFORMACJE SZCZEGÓŁOWE

8. Wymagania wstępne

Civil Engineering Materials, Concrete Technology, Strength of Materials, Structural (Building) Mechanics, Concrete Structures I

9. Cele przedmiotu

C1 student knows the basic principles of limit states design

C2 selects the materials and its characteristics for RC –and prestressed concrete members desing

C3 knows how to assess actions and action combinations

C4 analyses and designs of the reinforced and prestressed concrete structures

C5 works out of the project documentation for flat slab building

10. Efekty uczenia się w zakresie wiedzy, umiejętności i kompetencji społecznych

Student, który zaliczył przedmiot:	odniesienie do kierunkowych efektów uczenia się
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WIEDZA

EU01	student knows the basic principles of limit states design	K_W04, K_W06, K_W07
EU02	selects the materials and its characteristics for RC –and prestressed concrete members desing	K_W04, K_W06, K_W07
EU03	analyses and designs of the reinforced and prestressed concrete structures	K_W04, K_W06, K_W07

UMIEJĘTNOŚCI

EU04	selects the materials and its characteristics for RC –and prestressed concrete members desing	K_U03, K_U04, K_U10, K_U18
EU05	knows how to assess actions and action combinations	K_U02, K_U10
EU06	analyses and designs of the reinforced and prestressed concrete structures	K_U10, K_U11, K_U22, K_U28

KOMPETENCJE SPOŁECZNE

EU07	works out of the project documentation for flat slab	K_K01
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building	
11. Treści programowe	
Forma zajęć – wykłady	
<p>Increased knowledge of the design and construction of reinforced and prestressed concrete structures. The skills necessary to analyze, design and construct of engineering reinforced concrete objects. The skills to identify the issues related to the design (calculation and detailing of reinforcement) and construction of reinforced and prestressed concrete structures.</p> <p>Structural analysis, basic requirements; Slabs: one-way spanning solid and ribbed slabs; two-way spanning solid slabs; waffle slabs; flat slabs; stair slabs. Yield line design; Finite element (FE) design. Columns: short braced axially loaded columns; short columns subjected to axial load and bending; effective height of column (braced and unbraced); slenderness limits for columns. Foundations and Retaining Wall. Framed Buildings and frame analysis. Industrial buildings. Buildings with flat slabs. Precast RC-elements, basis of design and detailing. Prestressed concrete. Basic statements. Post-tensioned and pretensioned structures Prestress losses. Anchorage and transmission zones. Design of section under ULS and SLS Detailing of structural members.</p>	
Forma zajęć – projekt	
<p>Principles of planning the structural system of the building ceiling, selection of a static diagram and load collection. Principles of dimensioning bending sections. Assumptions of the truss model when calculating cross-sections for shear forces. Checking ULS (Ultimate Limit States) and SLS (Serviceability Limit States) of slabs and beams. Principles of reinforcing plates and beams. Shaping the reinforcement. Principles of drawing up construction drawings of dimensioned elements together with a list of reinforcing steel. Adoption of the static diagram of the designed structure and determination of the computational spans of the monolithic frame, Summary of loads and determination of internal forces using analytical and numerical methods. Preparation of an envelope of internal forces and dimensioning of the designed structure. Static calculations and dimensioning of load-bearing sections of the designed structure. Checking at SGN and SGU. Preparation of construction drawings.</p>	
12. Narzędzia/metody dydaktyczne	
1. traditional lecture	
2. tasks for self-solution	
3. group discussion of solutions proposed	
13. Sposoby oceny (częstkowe, końcowe)	
1. written exam	
2. project evaluation	
3. project discussion	
14. Obciążenie pracą studenta	
Forma aktywności	liczba godzin
1. Student's workload, including: teaching hours + tutorials	52
2. Preparatory work at home	23
	suma 75
	liczba punktów ECTS 3
15. Literatura	
Literatura podstawowa:	
1. Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings, 2004	
2. Tur V., Kosior-Kazberuk M., Grygo R., Tut A., Krassowska J. „Concrete Structures” Wyd. Politechniki Białostockiej 2020.	

Literatura uzupełniająca:
1. Designers guide to EN 1992-1-1 and EN 1992-1-2 Eurocode2- ThomasTelford,2009- 242p.
16. Formy oceny – szczegóły
<p>Lecture: exam</p> <p>Assessment criteria:</p> <p>A (5,0) 100 % - 90%</p> <p>B (4,0) 89% - 75%</p> <p>C (3,0) 74% - 51%</p> <p>D (2,0) 50 % and less than 50%</p> <p>Project: project and discussion</p> <p>Assessment criteria:</p> <p>A (5,0) 100 % - 90%</p> <p>B (4,0) 89% - 75%</p> <p>C (3,0) 74% - 51%</p> <p>D (2,0) 50 % and less than 50%</p>
17. Inne przydatne informacje o przedmiocie
1. Information about classes subjects is provided by a teacher during classes and consultations
2. Classes take place in the academy / on-line (Microsoft Teams)
3. Classes take place according to the current schedule
4. Consultations take place according to the current schedule