

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	Podstawy konstrukcji mostowych
NAZWA PRZEDMIOTU W JĘZYKU ANGIELSKIM	Introduction to Bridge Constructions
KOD PRZEDMIOTU	WIL BUD oIS D55 21/22
KATEGORIA PRZEDMIOTU	Przedmioty profilowe
LICZBA PUNKTÓW ECTS	5.00
SEMESTRY	6

2 RODZAJ ZAJĘĆ, LICZBA GODZIN W PLANIE STUDIÓW

SEMESTR	WYKŁAD	ĆWICZENIA AUDYTORYJNE	LABORATORIA	LABORATORIA KOMPUTERO- WE	PROJEKTY	SEMINARIUM
6	30	0	0	0	30	0

3 CELE PRZEDMIOTU

Cel 1 Basic knowledge of design of bridge structures, materials used in bridge construction, communication layout on the bridge and architectural design of bridge structures.

Cel 2 Basic knowledge of design and construction of concrete bridges, steel bridges, composite bridges and laminated timber bridges and also basic knowledge on bridge equipment. Knowledge preparing students to solve engineering tasks as well as to participate in scientific research in the field of bridge design and construction.

Kod archiwizacji:

Cel 3 Basic knowledge of actions and load combinations to EC (development of the static road traffic load models, combination of multi-component actions, development of fatigue load models, actions on footbridges, actions on railway bridges, accidental actions on bridges)

Cel 4 Basic knowledge of the structural analysis used for static and dynamic calculations during bridge design. Knowledge preparing students to solve engineering tasks as well as to participate in scientific research in the field of bridge design and construction.

4 WYMAGANIA WSTĘPNE W ZAKRESIE WIEDZY, UMIEJĘTNOŚCI I INNYCH KOMPETENCJI

1 Concrete structures

2 Steel structures

3 Structural mechanics

4 Soil mechanics

5 Strength of materials

5 EFEKTY KSZTAŁCENIA

EK1 Wiedza Knowledge of basic concepts and modern trends in design and construction (material selection) of road and rail bridges.

EK2 Wiedza Knowledge on design and construction of reinforced concrete bridges and basic information on design and construction of prestressed concrete bridges, steel bridges, composite bridges, arch bridges, cable stayed bridges, suspension bridges and movable bridges.

EK3 Umiejętności Ability to select a proper design and construction technique for a given situation (span length selection, material selection, communication layout on the bridge).

EK4 Umiejętności Ability to design a slab deck / beam deck reinforced concrete bridge to EC (set of conceptual drawings of the bridge, combinations of actions, structural analysis, calculations for ultimate limit states and serviceability limit states, detailing of reinforcement).

EK5 Kompetencje społeczne Ability to work in a design team either as a leader or a regular member.

6 TREŚCI PROGRAMOWE

WYKŁAD		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
W1	Organizational topics for Bridge Structures classes. Types and classification of the bridge structures, basic terminology and elements of the bridge structures. The historical development of the bridge structures.	4
W2	Design of communication layout on the bridge. Bridge accessories, bridge bearings, protection and bridge management. Basics of hydraulic and hydrologic calculations.	4
W3	Actions and load combinations to EC (actions on road bridges, actions on railway bridges, the combination of multi-component actions, actions on footbridges, accidental actions on bridges).	6

WYKŁAD		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
W4	Design and construction of concrete bridges (reinforced concrete and prestressed concrete bridges).	4
W5	Design and construction of steel bridges and composite bridges.	4
W7	Bridges construction methods.	4
W9	Long span bridges - cable stayed, suspension and arch bridge structures.	4

PROJEKTY		
LP	TEMATYKA ZAJĘĆ OPIS SZCZEGÓŁOWY BLOKÓW TEMATYCZNYCH	LICZBA GODZIN
P1	Conceptual design of a single span reinforced concrete road bridge. Setting up the structural form, communication layout on the bridge, location of the bridge and selecting the main accessories of the bridge.	4
P2	Setting up the basic parameters of the bridge: set of conceptual drawings of the superstructure - cross sections, longitudinal sections and top view drawings.	6
P3	Actions and combination of actions (non-traffic actions for persistent design situations, traffic loads on road bridges and others when applicable). Calculations carried out for the bridge main girders.	6
P4	Detailed structural calculations for the main components of the bridge - RC main beams.	4
P5	Analysis of one of the main beams for ultimate limit states (bending, shear) and serviceability limit states (stress limitation, crack control, deflection control).	6
P6	Execution of selected detailed drawings and detailing of reinforcement steel	4

7 NARZĘDZIA DYDAKTYCZNE

N1 Lecture

N2 Discussion

N3 Multimedia presentation

N4 Consultations

N5 Work in groups