STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Fundamentals of Bridge Engineering**		Code **1010101151010120359**
Field of study **Civil Engineering First-cycle Studies**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 5**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **15** Laboratory: **-** Project/seminars: **15**		No. of credits **4**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of the strength of materials, structural mechanics, soil mechanics, concrete structures, steel structures, foundation design and fundamentals
2	**Skills**	Skills related to the static calculations and design of concrete and steel structures, self-learning skills
3	**Social competencies**	Ability to adapt of the type of any civil engineering structure to the communication requirements and social expectations, respect for the Polish language, understand the need for lifelong learning and group collaboration

Assumptions and objectives of the course:

Understanding the terminology used to describe bridge structure.

Understanding the structural elements of selected types of spans and bridge supports and their functions.

Knowing selected loads used to calculate the bridge structures.

Understanding of selected issues in the field of static calculations of bridge structures.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Student knows the definitions of parameters characterizing the position and dimensions of bridge structures, he knows the names of components of structure and equipment of bridges and knows their functions - [K_W09]

2. Student knows the classifications of different types of bridge spans, their supports and equipment elements - [K_W09]

3. Student knows the permanent and moving loads appearing on bridges according to European standard PN-EN - [K_W06]

Skills:

1. Student can name components of spans and supports of bridges and can describe every bridge using the correct terminology - [K_U01]

2. Student can draw: cross-section and longitudinal view of simple slab-beam bridge structure, as well as a abutment and a bridge intermediate support - [K_U01, K_U07]

3. Student is able to determine permanent and moving loads of bridge structure or part thereof - [K_U04]

Social competencies:

1. Student can adapt the type of structure to the communication requirements and social expectations - [K_K08]

2. Student can collaborate and work together in a group, is aware of the need for self-education - [K_K01, K_K03]

3. Student complies with the principles of the Polish language and the rules of preparation of technical documentation - [K_K07]

Assessment methods of study outcomes

Written test of the student's knowledge in the field of material presented during the lectures

Written test of the student's knowledge in the field of material presented during the seminars

Preparation of some static-strength calculation of simple road beam bridge (project) and oral test of knowledge of the range of this project

Course description

Lectures:

Basic definitions, main elements of bridge structure, types and elements of bridge spans, types and element of bridge supports, bridge bearings, bridge span equipment, bridge structure dimensions, bridge classifications, permanent and moving loads on bridges, basic methods of bridge span and support analysis

Seminars:

static analysis of spans and bridge supports

Projects:

drawings of the cross-section and longitudinal and top views of the bridge, the selected static calculations of bridge structural elements

Basic bibliography:

1. Ryżyński A., Wołowicki W.: Karlikowski J., Skarżewski J.: Mosty stalowe, PWN, Warszawa 1985
2. Madaj A., Wołowicki W.: Projektowanie mostów betonowych, WKiŁ, Warszawa 2010
3. Madaj A., Wołowicki W.: Podstawy projektowania budowli mostowych, WKiŁ, Warszwa 2007
4. Czudek H., Radomski R.: Podstawy mostownictwa, PWN Warszawa 1983
5. Stefan Gałczyński: Podstawy budownictwa podziemnego, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2001

Additional bibliography:

1. PN-EN 1991-2:2007 Eurokod 1: Oddziaływania na konstrukcje, Część 2: Obciążenia ruchome mostów
2. Kazimierz Furtak, Maciej Kędracki: Podstawy budowy tuneli, Wydawnictwo Politechniki Krakowskiej, Kraków 2005
3. Fritz Leonhardt, Podstawy budowy mostów betonowych, WKiŁ, Warszawa 1982
4. Jan Biliszczuk: Mosty podwieszone. Projektowanie i realizacja, Arkady 2005
5. Andrzej Flaga: Mosty dla pieszych, WKiŁ, Warszawa 2011

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	60
2. Studying	40

Student's workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	60	3
Practical activities	70	3