STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Bridges-maintenance**		Code **1010101171010105404**
Field of study **Civil Engineering First-cycle Studies**	Profile of study (general academic, practical) **(brak)**	Year /Semester **4 / 7**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits **3**
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:

dr hab inż. Arkadiusz Madaj
email: arkadiusz,madaj@put.poznan.pl
tel. 61 647 5830
Wydział Budownictwa i Inzynierii Środowiska
61-138 Poznań, ul. Piotrowo 5

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	The basics information concerning engineering constructions (components, classification, loads). The rules of design and forming.
2	**Skills**	The ability to make a cause-result analysis. The rules of preparing design records.
3	**Social competencies**	The awareness of constant gaining knowledge. The ability to form ideas and communicate among the group. The proper use of polish language. Cultural behavior.

Assumptions and objectives of the course:

-Getting to know the concept of construction durability and the methods of its controlling. Getting to know the range of research of the construction during its realization and exploitation. Getting to know the causes of bridge degradation and the methods of their prevention. The ability to evaluate the technical state of a bridge construction.

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

Knowledge:

1. The concept of durability. - [K_W07]
2. The basic damages of used bridges, their causes and results. - [K_W10]
3. The rules of carrying out an inspection. - [K_W10]
4. The evaluation of damages influence on durability and safety. - [K_W09]

Skills:

1. To evaluate the technical state of a bridge. - [K_U16]
2. To carry out the basic research which enable the evaluation of technical state and the threat to safety of exploitation of bridges. - [K_U16]
3. To prepare documentation concerning a technical state of a bridge. - [K_U19]

Social competencies:

1. The awareness of constant gaining knowledge. - [K_K06]
2. Communication among the group. - [K_K01]
3. The ability to work In a team. - [K_K01]

Assessment methods of study outcomes

-Test concerning the lectures subjects.

Course description
- The concept of bridge durability. The maintenance services. Bridges documentation. Bridges inspections. The rules of carrying out an inspection. Diagnostics of basic bridge damages. The maintenance of bridges and their surroundings.

Basic bibliography:

1. A. Madaj, W. Wołowicki. Budowa i utrzymanie mostów. WKiŁ. 2013.

Additional bibliography:

1. A.Madaj, W.Wołowicki: Podstawy projektowania budowli mostowych, WKŁ, Warszawa
2. M. Jasakow: Ochrona mostów przed korozją, WKiŁ, 1981
3. L. Czarnecki, T. Broniewski, O. Henning: Chemia w budownictwie. Arkady, 1994
4. M. Gruener: Korozja i ochrona betonu, Arkady, 1983
5. G. Wranglen: Podstawy korozji i ochrona metali, WNT, 1985

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	30
2. Literatury study	40
3. Preparation for the test	30

Student's workload

Source of workload	hours	ECTS
Total workload	100	3
Contact hours	30	1
Practical activities	0	0