MODULE SPECIFICATION

Module code	
Module title in Polish	**Ocena jakości betonu w konstrukcji**
Module title in English	**Evaluation Quality of Concrete in Structure**
Module running from the academic year	**2016/2017**

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	**Civil Engineering**
Level of qualification	**First cycle** *(first cycle, second cycle)*
Studies profile	**Academic** (*academic/practical)*
Mode of study	**Full-time** *(full-time / part-time)*
Specialism	**Building Engineering Technologies and Organization**
Organisational unit responsible for module delivery	**The Department of Building Engineering Technologies and Organisation**
Module co-ordinator	**Przemysław Czapik, Phd Eng.**
Approved by	**Marek Iwański, Professor**

B. MODULE OVERVIEW

Module type	**Core module** (*core/programme-specific/elective HES*)*
Module status	**Compulsory module** *(compulsory / non-compulsory)*
Language of module delivery	**English**
Semester in the programme of study in which the module is taught	**Semester 6**
Semester in the academic year in which the module is taught	**Summer semester** *(winter / summer)*
Pre-requisites	**None** (*module code/module title, where appropriate)*
Examination required	**No** *(yes / no)*
ECTS credits	**2**

Mode of instruction	**lectures**	**classes**	**laboratories**	**project**	**others**
Total hours per semester	**15**		**30**		

* elective HES − elective modules in the Humanities and Economic and Social Sciences

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to learn the principles of inadequate concrete durability in a structure, specialist test methods of concrete, and acquiring the abilities of assessing concrete quality in concrete building structures.	The aim of the r cases as regard circular and thi stability of rod e

Module outcome code	Module learning outcomes	Mode of instruction *(l/c/lab/p/ others)*	Corresponding programme outcome code	Corresponding discipline-specific outcome code
W_01	A student has knowledge as regards the conditions of exploiting a concrete structure and the mechanisms of concrete degradation.	l/l	B_W01 B_W02	T1A_W01
W_02	A student knows the causes of inadequate concrete durability in a structure.	l/l	B_W21	T1A_W03
W_03	A student knows the methods of diagnostic tests of concrete in a structure.	l/l	B_W08 B_W21	T1A_W04 T1A_W06 T1A_W07
U_01	A student can assess the quality of concrete in a structure.	l/l	B_U23	T1A_U09 T1A_U15
U_02	A student can determine the causes of concrete degradation.	l/l	B_U23	T1A_U07
U_03	A student can assess the degree of degradation advancement as well as its range.	l/l	B_U23	T1A_U01 T1A_U08 T1A_U14
K_01	A student can work in a team.	l	B_K01	T1A_K03
K_02	A student is responsible for the reliability of the obtained results.	l	B_K02	T1A_K02 T1A_K05 T1A_K07
K_03	A student can formulate conclusions and describe the results of laboratory tests.	l	B_K03	T1A_K01 T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	The properties of concrete which determine its durability in various exploitation conditions.	W_01 U_01
2	The reasons for inadequate concrete durability. The factors interacting with a building structure.	W_02 U_02
3	Exposure class of concrete. The mechanisms of concrete degradation in a structure.	W_01 U_03
4	The reasons and types of internal corrosion of concrete.	W_02 U_02
5	The methods of in situ concrete tests as regards the existing structures (assessing its quality).	W_03 U_01
6	The methods of laboratory tests for the assessment of material state in a structure.	W_03 U_01
7	Assessing the type and range of corrosive destructions of concrete.	W_01 W_03 U_01
8	Assessing the level of advancement concerning corrosion processes; designing the durability of structure.	W_01 W_03 U_01

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories

No.	Topics	Module outcome code
1	The principles of conducting diagnostic works.	W_01 U_02
2	Providing an inventory of damages and making photographic documentation.	W_02 U_01
3	Non-destructive testing of concrete elements.	W_03 K_01
4	Taking samples for laboratory tests.	W_03
5.	Testing the absorbability and volumetric density of concrete boreholes.	W_03 U_01
6	Testing the strength of concrete boreholes, a test.	W_03 K_01
7	Testing the composition of concrete (insoluble parts).	W_02 U_03
8	Testing the composition of concrete (thermal and X-ray analyses).	W_02 U_03
9	Estimating the concrete composition.	W_03 K_02
10	Preparing documentation, a test.	W_01 K_02
11	Chemical tests of corrosion range (pH).	W_02
12	Chemical tests of corrosion range (the content of Cl-).	W_02 U_03
13	Chemical tests of corrosion range (the content of SO42-).	W_02 U_03
14-15	Preparing exploitation recommendations for the utilised object.	W_02 U_03 K_03

4. Topics to be covered in the projects

Assessment methods

Module outcome code	Assessment methods *(Method of assessment; for module skills − reference to specific project, laboratory and similar tasks)*
W_01	A test and a report on laboratory class assignments
W_02	A test and a report on laboratory class assignments
W_03	A test and a report on laboratory class assignments
U_01	A test and a report on laboratory class assignments
U_02	A test and a report on laboratory class assignments
U_03	A test and a report on laboratory class assignments
K_01	A report on laboratory class assignment
K_02	A report on laboratory class assignment
K_03	A report on laboratory class assignment

C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	**Study time/ credits**
1	Contact hours: participation in lectures	**15**
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	**30**
4	Contact hours: attendance at office hours (2-3 appointments per semester)	**1**
5	Contact hours: participation in project-based classes	
6	Contact hours: meetings with a project module leader	
7	Contact hours: attendance at an examination	**2**
8		
9	**Number of contact hours**	**48** *(total)*
10	**Number of ECTS credits for contact hours** *(1 ECTS credit =25-30 hours of study time)*	**1.6**
11	Private study hours: background reading for lectures	**2**
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	**3**
14	Private study hours: preparation for laboratories	**2**
15	Private study hours: writing reports	**3**
16	Private study hours: preparation for a final test in laboratories	**2**
17	Private study hours: preparation of a project/a design specification	
18	Private study hours: preparation for an examination	
19		
20	**Number of private study hours**	**12** *(total)*
21	**Number of ECTS credits for private study hours** *(1 ECTS credit =25-30 hours of study time)*	**0.4**
22	**Total study time**	**60**
23	**Total ECTS credits for the module** *(1 ECTS credit =25-30 hours of study time)*	**2**
24	**Number of practice-based hours** *Total practice-based hours*	**35**
25	**Number of ECTS credits for practice-based hours** *(1 ECTS credit =25-30 hours of study time)*	**1.2**