STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Concrete Structures		**1010102111011013706**
Field of study	Profile of study (general academic, practical)	Year /Semester
Structural Engineering Second-cycle Studies	**general academic**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
Second-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **-** Classes: **15** Laboratory: **-** Project/seminars: **15**		**2**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
other	**university-wide**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

dr inż. Teresa Grabiec-Mizera
email: teresa.grabiec-mizera@put.poznan.pl
tel. +48 061 665 2085
Faculty of Civil and Environmental Engineering
60-785 Poznań, ul.Piotrowo 5

Responsible for subject / lecturer:

dr inż. Piotr Frąszczak
email: piotr.fraszczak@put.poznan.pl
tel. + 48 061 665 2085
Faculty of Civil and Environmental Engineering
60-785 Poznań, ul.Piotrowo 5

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	A student has the knowledge of general mechanics and strength of materials, basis of theory of reinforced concrete structures, knows analysis principles of simple and complex RC elements design. A student knows building standards and requirements concerning design of building structures and their elements.
2	**Skills**	A student can estimate and report permanent and variable loads acting on building structures. Student can classify building structures, design RC structure elements and choose analytical or numerical solution of engineering problems.
3	**Social competencies**	A student understands the need for lifelong learning and knows how to interact in a group.

Assumptions and objectives of the course:

-The gaining of knowledge and skills concerning design of RC slab elements (working in different way) in ULS and SLS. Analysis of building structures. Preparing for modeling of RC structures by the Autodesk Robot Structural Analysis Program.

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

Knowledge:

1. A student knows the basic design method of RC slab elements in RC structures - [K 2 W02, K 2 W04, K 2 W14]
2. A student presents the design issues of spatial RC structures - [K 2 W04, K 2 W09, K 2 W14]
3. A student knows the range applying of computers program needed to analyse and design RC structures. - [K 2 W08, K 2 W16]

Skills:

1. A student uses building standards of loads on building structures as well as in the static calculation and dimensioning of RC structures. - [K 2 W01, K 2 W02, K 2 W03,]
2. A student is able to design RC slab structures with taken frames into consideration - [K 2 W03, K 2 W13]

Social competencies:

1. A student understands the need of lifelong learning, is able to organize the learning process of others. - [K 2 W02, K 2 W03]
2. A student is able to cooperate and work in a group - [K 2 W01, K 2 W06]
3. He correctly identifies and resolves problems associated with his profession - [K 2 W07]

Assessment methods of study outcomes

-Credit of exercise classes
Credit in written form (1.0h)
Credit of projects
Estimation of individual projects on the basis of calculations and structural drawings with a defence of submitted work
Number of evaluation

[%]	(grade)
100- 91	A excellent
90- 75	B very good
74- 65	C good
64- 51	D sufficient
< 50	E failed

Course description

-Form of teaching: classes
Method of designing and dimensioning RC slab structures especially two-way reinforced slabs
Load report in two-way reinforced slabs
Dimensioning of reinforced concrete slab structures to bending and shear ULS, SLS.
Form of teaching: projects
Project of two-way reinforced slab

Basic bibliography:

1. 1.Nilson H.A., Darwin D., Dolan w. Ch. Design Concrete Structures Mc Graw Hill Higher Education. 2004.
2. 2.Mosley B., Bungey J., Hulse R. Reinforced Concrete Design Palgrave Macmillan. 2007.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Participation in audience classes	15
2. Participation in design classes	15
3. Complete (at home) works involved in the project	15
4. Participation in the consultations associated with the audience and design classes	5
5. Preparing to the final test of classes content	10

Student's workload

Source of workload	hours	ECTS
Total workload	50	2
Contact hours	35	1
Practical activities	30	1