STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Structural Engineering		**1010102121010103704**
Field of study	Profile of study (general academic, practical)	Year /Semester
Structural Engineering Second-cycle Studies	**(brak)**	**1 / 2**
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: **30** Classes: **15** Laboratory: **15** Project/seminars: **-**		**3**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
(brak)	**(brak)**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

prof. nadzw. dr hab. Inż. Tomasz Z. Błaszczyńsk
email: tomasz.blaszczynski@put.poznan.pl
tel. 61 665 28 61
Wydział Budownictwa i Inżynierii Środowiska
ul. Piotrowo 5, 60-965 Poznań

Responsible for subject / lecturer:

Dr inż. Agnieszka Ślosarczyk
email: agnieszka.slosarczyk@put.poznan.pl
tel. 61 665 28 61
Wydział Budownictwa i Inżynierii Środowiska
ul. Piotrowo 5, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	The basic knowledge from the construction materials.
2	**Skills**	Best to design the construction materials in the building.
3	**Social competencies**	The consciousness of the necessity of continuous updating and supplementings of the building knowledge and engineer skills.

Assumptions and objectives of the course:

The delivery the maximum of the knowledge from the contemporary construction materials.

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

Knowledge:

1. Student knows the industrial production rule and technical parameters of modern construction materials. - [-]
2. Student knows at present applied construction materials and basic elements of the technology of their production. - [-]
3. Student knows current directions of the development of construction materials. - [-K_W07]

Skills:

1. Student can select materials for the realization of the ecological and sustainable construction objects. - [-]
2. Student can select materials for the realization of the energy-saving, passive and zeroenergeting construction objects. - [-]
3. Student can prepare elaborations preparing him to undertake the scientific work. - [-]
4. Student has a skill of communicating in English, together with the familarity of elements of technical language from construction engineering. - [-K_U14]

Social competencies:

1. Student independently supplements and extends the knowledge of modern construction materials. - [-K_K03]
2. Student is responsible for the honesty of obtained results of his own works and the estimation of works of the team subjected to him. - [-K_K02]
3. Student has a consciousness of the necessity of the lifting of professional and personal competences. - [-K_K06]
4. Student has a consciousness of the need of the sustainable development in construction. - [-K_K04]
5. Student understands the need of the transfer to the society of the construction knowledge. - [-K_K08]

Assessment methods of study outcomes

-Assessment of knowledge:
activity during classes and a lecture,
colloquium at the auditorium exercises,
essay,
project.

colloquium at the auditorium exercises,
essay,
project.

The grading scale determined from:

Points:	grade:
higher then 100	excellent (A+)
91	very good (A)
81	good plus (B)
71	good plus (C)
61	adequate plus (D)
51	adequate (E)
Lower then 50	inadequate (F)

Course description

Functions of construction materials.
Basic parameters and criteria of the choice of construction materials.
New trends in concrete technology.
SCC and photocatalytic concretes.
HSC, UHSC and fiber-concretes.
Light transmitting and glass concretes.
Geopolymer concretes.
Elastic and self-repearing concretes.
Corrosion and durability of construction materials.
Nanotechnologies in construction.
Glass as the modern construction material.
Timber as the modern construction material.
Steel as the modern construction material
Ceramics as the modern construction material.
Modern waterproofing materials.
Modern thermal insulation materials.

Basic bibliography:

1. Derek Osborn, Introduction to building, Michell, London, 1991
2. Francis D.K. Ching, Building Illustrated, Van Nostrand Reinhold, New York, 1991
3. Sylvia Leydecker, Nano Materials In Architecture and Interior Architecture and Design, Birkhauser Verlag AG, 2008
4. Tomasz Błaszczyński, Durability and repair of building structures, DWE, Wrocław, 2010
5. Tomasz Błaszczyński, Barbara Ksit, Bogdan Dyzman, Podstawy budownictwa zrównoważonego z elementami certyfikacji energetycznej, DWE, Wrocław, 2012
6. Pakiet do projektowania budynków pasywnych PHPP, PIBP, 2006
7. Praca Zbiorowa, Budynki pasywne mistrzowie oszczędzania energii. Rozwiązania i przykłady obliczeń, KRES, 2006
8. Henry J. Cowan, Peter R. Smith, The Science and Technology of Building Materials, Van Nostrand Reinhold Company, New York, 1988
9. Sylvia Leydecker, Nano Materials In Architecture and Interior Architecture and Design, Birkhauser Verlag AG, 2008
10. Tomasz Błaszczyński, Durability and repair of building structures, DWE, Wrocław, 2010
11. Tomasz Błaszczyński, Barbara Ksit, Bogdan Dyzman, Podstawy budownictwa zrównoważonego z elementami certyfikacji energetycznej, DWE, Wrocław, 2012
12. Pakiet do projektowania budynków pasywnych PHPP, PIBP, 2006
13. Praca Zbiorowa, Budynki pasywne mistrzowie oszczędzania energii. Rozwiązania i przykłady obliczeń, KRES, 2006

Additional bibliography:

1. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Trwałość i skuteczność napraw obiektów budowlanych, DWE, Wrocław, 2007
2. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Współczesne metody naprawcze w obiektach budowlanych, DWE, Wrocław, 2009
3. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Trwałe rozwiązania naprawcze w obiektach budowlanych, DWE, Wrocław, 2010
4. Tomasz Błaszczyński, Jacek Wdowicki, Betonowe budynki wysokie, w: Konstrukcje budynków, Budownictwo Ogólne, tom 4, Arkady, Warszawa, 2009
5. Tomasz Błaszczyński, Trwałość budynków i budowli, DWE, Wrocław, 2012
6. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Trwałość i skuteczność napraw obiektów budowlanych, DWE, Wrocław, 2007
7. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Współczesne metody naprawcze w obiektach budowlanych, DWE, Wrocław, 2009
8. Mieczysław Kamiński, Józef Jasiczak, Wiesław Buczkowski, Tomasz Błaszczyński, Trwałe rozwiązania naprawcze w obiektach budowlanych, DWE, Wrocław, 2010
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10. Tomasz Błaszczyński, Trwałość budynków i budowli, DWE, Wrocław, 2012

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures	30
2. participation in project classes	30
3. participation in the consultation	10
4. preparation to attend and pass the examination	22
5. project realisation	20

Student's workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	65	3
Practical activities	45	2