STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Structural Mechanics		**1010104141010100048**
Field of study: **Civil Engineering First-cycle Studies**	Profile of study (general academic, practical): **(brak)**	Year /Semester: **2 / 4**
Elective path/specialty: **-**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **part-time**	
No. of hours: Lecture: **12** Classes: **10** Laboratory: **-** Project/seminars: **10**		No. of credits: **5**
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**	1. Student knows the basic concepts of static of statically determinate rod structures. 2. Student knows the basic concepts related to the strength of materials.
2	**Skills**	1. Student can calculate the internal forces in statically determinate rod structures. 2. Student can calculate the stress and strain in the cross sections of bars.
3	**Social competencies**	Student is responsible for brought a basic knowledge of general mechanics and strength of materials.

Assumptions and objectives of the course:

Knowledge of the theoretical models and mechanics flat rod systems. Learn how to calculate internal forces and displacements of generalized systems statically determinate and indeterminate.

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

Knowledge:

1. Relationships between displacements, and the load on the statics of simple rod systems. - [KW_04]
2. Basic principles and theorems of linear structural mechanics. - [KW_04]
3. Manners to create computational models of flat bar structures. - [KW_04]

Skills:

1. Determine the distribution of internal forces and calculate the generalized displacement caused by any load, the influence of thermal and kinematic systems in flat rod systems (trusses, beams and frames). - [KU_04]
2. Determine the distribution of internal forces in statically indeterminate systems using flexibility methods. - [KU_04]

Social competencies:

1. Student is responsible for the correctness of the calculations undertaken. - [K_K02]
2. Student describes performed calculations and draw conclusions from their results. - [K_K02, K_K10]

Assessment methods of study outcomes

1. Written and oral examination at the end of the semester.
2. One written tests checking the knowledge and skills in the subject.
3. Two exercises for individual design solutions.

Course description

Informative and monographic lecture.

1. Models structural systems.
2. The principle of virtual work.
3. Theorem: Betti, Maxwell and Rayleigh.
4. Statically indeterminate systems rod, the impact load forces generalized changes in temperature and settling supports.
5. Solving framework, continuous beams, trusses and arches using flexibility method.

Basic bibliography:

1. W. Nowacki Mechanika budowli PWN Warszawa 1974
2. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989
3. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976
4. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007
5. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008
6. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011
7. W. Nowacki Mechanika budowli PWN Warszawa 1974
8. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989
9. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976
10. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007
11. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008
12. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011
13. W. Nowacki Mechanika budowli PWN Warszawa 1974
14. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989
15. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976
16. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007
17. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008
18. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011
19. W. Nowacki Mechanika budowli PWN Warszawa 1974
20. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989
21. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976
22. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007
23. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008
24. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011

Additional bibliography:

1. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl
2. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl
3. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl
4. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl

Result of average student's workload

Activity	Time (working hours)
1. Preparation of the first exercise design.	20
2. Preparation of the second exercise design.	20
3. Preparation of the first test.	15
4. Preparation of the second test.	15
5. Preparation of the exam.	12

Student's workload

Source of workload	hours	ECTS
Total workload	138	5
Contact hours	38	2
Practical activities	70	3