STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Fundamentals of mechanics		**1010104111010104898**
Field of study	Profile of study (general academic, practical)	Year /Semester
Civil Engineering First-cycle Studies	**(brak)**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
First-cycle studies	**part-time**	

No. of hours				No. of credits
Lecture: **12**	Classes: **10**	Laboratory: **-**	Project/seminars: **10**	**5**

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:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematics and physics.
2	**Skills**	The student has the ability to self-learning, can acquire information from literature, databases and other sources.
3	**Social competencies**	The student understands the need for learning throughout life, is able to interact and work in a group.

Assumptions and objectives of the course:

Acquire the knowledge, skills and competence in solving problems concerning statics and kinematics of the material point and rigid body, which is necessary for further study of the strength of materials, structural mechanics and theory of elasticity and plasticity.

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

Knowledge:

1. Student knows conditions of geometrical invariability of a system of rigid bodies. - [K_W04]
2. Student knows the equilibrium conditions for two-dimensional set of forces. - [K_W04]
3. Student knows the methods of determining of internal forces in statically determined plane structures. - [K_W04]
4. Student knows the equilibrium equations for beams. - [K_W04]

Skills:

1. Student can identify statically determined and geometrically invariable structural systems. - [K_W04]
2. Student can determine reaction forces in plane structures. - [K_W04]
3. Student can determine internal forces in plane trusses, beams and frames. - [K_W04]
4. Student can draw the diagrams of internal forces in beams and frames. - [K_W04]

Social competencies:

1. Students can work independently or cooperate in group on specific task. - [K_K01]
2. Student is responsible for th eaccuracy of obtained results of his work and their interpretation. - [K_K02]
3. Student is reponsible for safety of the own work and work of the team. - [K_K05]
4. Student understand the need of raising of the professional and personal competences. - [K_K06]

Assessment methods of study outcomes

- classes are passed in the case of positive mark (at least E) in written test (duration of the test 90 minutes), dates are given at the beginning of the semester,
- project classes are passed in the case of positive marks (at least E) in 4 project tasks; evaluation depends on the result of the discussion on issues related to the project
- the subject is finished by written exam (duration 3x45 minutes), dates are given at the beginning of the semester.

Scale of the evaluation:
excellent (A)
good (B)
average (C)
passing (D)
near failed (E)
failed (F)

Course description

Newton's laws of mechanics. Elements of vector calculus: force, moment of a force about a point and about an axis. Force couple and its properties. Reduction of a system of forces. Resultant force. Equilibrium of a system of forces. Degrees of freedom. Constraints and reaction forces. Conditions of geometrical invariability of a system of rigid bodies. Statically determined systems. Internal forces in statically determined plane structures: systems of rigid bodies, truss structures, beams and plates. Differential equations of internal equilibrium in beams.

Basic bibliography:

1. Przewłócki J., Górski J.: Podstawy mechaniki Budowli. Arkady, Warszawa, 2006
2. Leyko J.: Mechanika ogólna. PWN, Warszawa, 2008
3. Grabowski J., Iwanczewska A.: Zbiór zadań z wytrzymałości materiałów. Oficyna Wydawnicza Politechniki Warszawskiej, 2006
4. Dębiński J.: Siły przekrojowe w układach statycznie wyznaczalnych. Wydawnictwo Politechniki Poznańskiej, 2011
5. Beer F. P., Johnston E. R.: Vector Mechanics for Engineers, Statics, International Student Edition, McGraw-Hill Book Company Japan, Tokyo 1984.
6. Shelley J. F.: Engineering Mechanics, Dynamics, McGraw-Hill Book Company 1980.
7. Przewłócki J., Górski J.: Podstawy mechaniki Budowli. Arkady, Warszawa, 2006
8. Leyko J.: Mechanika ogólna. PWN, Warszawa, 2008
9. Grabowski J., Iwanczewska A.: Zbiór zadań z wytrzymałości materiałów. Oficyna Wydawnicza Politechniki Warszawskiej, 2006
10. Dębiński J.: Siły przekrojowe w układach statycznie wyznaczalnych. Wydawnictwo Politechniki Poznańskiej, 2011
11. Beer F. P., Johnston E. R.: Vector Mechanics for Engineers, Statics, International Student Edition, McGraw-Hill Book Company Japan, Tokyo 1984.
12. Shelley J. F.: Engineering Mechanics, Dynamics, McGraw-Hill Book Company 1980.

Additional bibliography:

1. Praca zbiorowa: Wytrzymałość materiałów. Zarys teorii, przykłady, zadania. Część I. Wydawnictwo PP, 1992
2. Cywiński Z.: Mechanika budowli w zadaniach. Układy statycznie wyznaczalne. PWN Warszawa, 2006.
3. Praca zbiorowa: Wytrzymałość materiałów. Zarys teorii, przykłady, zadania. Część I. Wydawnictwo PP, 1992
4. Cywiński Z.: Mechanika budowli w zadaniach. Układy statycznie wyznaczalne. PWN Warszawa, 2006.

Result of average student's workload

Activity	Time (working hours)
1. Participation in the lectures	12
2. Participation in the classes	10
3. Participation in the project classes	10
4. Continuation of the projects	30
5. Participation in the consultations	10
6. Exercises before classes tests	25
7. Exercises before projects defense	10
8. Exercises before final exam	15
9. Participation in the exam	3

Student's workload

Source of workload	hours	ECTS

Total workload	125	5
Contact hours	45	2
Practical activities	10	1