

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 2

1. Course title: STRENGTH OF MATERIALS		2. Course code		
3. Validity of course description: from 2013/2014				
4. Level of studies: BSc level				
5. Mode of studies: intramural studies				
6. Field of study: POWER ENGINEERING		(FACULTY SYMBOL) RIE		
7. Profile of studies: general				
8. Programme: all				
9. Semester: third				
10. Faculty teaching the course: Institute of Power Engineering and Turbomachinery				
11. Course instructor: Dr hab. inż. Grzegorz Nowak				
12. Course classification: fundamental				
13. Course status: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: basics of mechanics, English knowledge				
16. Course objectives: knowledge extension in the field of engineering mechanics				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	Student knows the basic principles of the strength of materials	Exam	Lecture	K_W13 K_W16
2.	Student has knowledge of simple and complex load cases of bars	Exam	Lecture	K_W13 K_W16
3.	Student has knowledge of material behavior and failure criteria	Exam	Lecture	K_W13 K_W16 K_K02
4.	Student can calculate internal loads within bars for simple load cases	Test	Classes	K_U03
5.	Student can determine stress within bars for simple load cases	Test	Classes	K_U03
6.	Student can determine deformations within bars for simple load cases	Test	Classes	K_U03
7.	Student has knowledge of material testing.	Reports	Laboratory	K_W13
8.				
18. Teaching modes and hours Lecture 30 Class 30 Lab 15				
19. Syllabus description:				
lecture: The internal forces in the rods, the concept of stress and strain. The mechanical properties of materials, stress-strain diagram. Tension and compression of rods and rod systems. Torsion of bars. Beam bending. The axis of the deflected beam. Shear of rods. The basic theory of stress and strain. Failure of material, Strength theories. Combined stress of rods. Thermal stress. Shells axially - symmetric and pipes. Rotating disks. Fatigue and creep. Buckling of columns.				
classes: stress and deformation in the bars for simple load cases: axially loaded members, torsion of shafts, bending of beams, shear. Statically determinate and indeterminate systems, determination of beam deflected axis.				

20. Examination: no

21. Primary sources:

J.L. Meriam, L.G. Kraige, Mechanics of Materials, Wiley, 2011
Hibbeler, Mechanics of Materials, Prentice Hall, 2013

22. Secondary sources:

Orłoś Z. (red.), Wytrzymałość materiałów, Wydawnictwo Naukowe PWN, Warszawa 2006,
Niezgodziński T., Zadania z wytrzymałości materiałów, PWN, 2009

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30 / 35
2	Classes	30 / 35
3	Laboratory	15 / 25
4	Project	/
5	BA/ MA Seminar	/
6	Other	10/
	Total number of hours	85 / 95

24. Total hours: 180

25. Number of ECTS credits: 6

26. Number of ECTS credits allocated for contact hours: 3

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 4

26. Comments:

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)