



MODULE DESCRIPTION

Module code	full-time studies:	Z-ZIP1-E-633b
	part-time studies:	Z-ZIPN1-E-633b
Module name	Some Aspects of Materials Strength	
Module name in Polish	Wybrane aspekty wytrzymałości materiałów	
Valid from academic year	2024/2025	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	MANAGEMENT AND PRODUCTION ENGINEERING
Level of education	1st degree
Studies profile	General
Form and method of conducting classes	Full-time and Part-time
Specialisation	Production and Innovation Management
Unit conducting the module	Department of Production Engineering
Module co-ordinator	Anna Rębosz-Kurdek, PhD
Approved by:	Dariusz Bojczuk, PhD, DSc

MODULE OVERVIEW

Type of subject / group of subjects	Specialist subject
Module status	Non-compulsory
Language of conducting classes	English
Module placement in the syllabus - semester	Semester VI
Initial requirements	No requirements
Examination (YES/NO)	NO
Number of ECTS credit points	1

Method of conducting classes		Lecture	Classes	Laboratory	Project	Other
Per semester	full-time studies:	15				
	part-time studies:	9				

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	The student has knowledge, provided in English, of the basic quantities describing the behaviour of deformable bodies.	ZIP1_W02
	W02	The student has knowledge, provided in English, about simple strength cases for bar structures.	ZIP1_W02
	W03	The student has knowledge, provided in English, on selected issues of material and structure safety in the aspect of the product life cycle.	ZIP1_W02 ZIP1_W07 ZIP1_W15
Skills	U01	The student has the ability to communicate in English, taking into account technical vocabulary related to the strength of materials.	ZIP1_U05
Social competences	K01	The student recognizes the importance of knowledge in the area of materials strength in solving engineering problems and understands the need for constant supplementation of this knowledge in order to improve professional qualifications.	ZIP1_K01
	K02	The student is aware of the importance of professional action with the use of knowledge obtained in English.	ZIP1_K03

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	<p>Basics of materials strength, assumptions and simplification of the object. Material models, classification of structure models. Simple Stresses and Strains. Principal stresses. Geometry of the cross-section of the bar - centroid and moment of Inertia. Internal forces in the bar, classification of strength cases. Extension of bars. Torsion of Circular Members. Shear Forces and Bending Moments. Strain energy. Strain energy methods. Strength hypotheses. Buckling of the straight bars.</p>

METHODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes (select X)					
	Oral exam	Written exam	Test	Project	Statement	Other
W01						X
W02						X
W03						X
U01						X
K01						X
K02						X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Grade for a presentation in English of a selected topic specified by the lecturer.

STUDENT WORKLOAD

Balance of ECTS points												
No.	Type of student's activity	Student's workload										Unit
		full-time					part-time					
		Lc	C	Lb	P	O	Lc	C	Lb	P	O	
1.	Participation in the activities	15					9					h
2.	Other (consultation, exam)	2					2					h
3.	Number of hours of a student's assisted work	17					11					h
4.	Number of ECTS credit points which are allocated for assisted work	0,7					0,4					ECTS
5.	Number of hours of a student's unassisted work	8					14					h
6.	Number of ECTS credit points which a student receives for unassisted work	0,3					0,6					ECTS
7.	Work input connected with practical classes	0					0					h
8.	Number of ECTS credit points which a student receives for practical classes	0,0					0,0					ECTS
9.	Total number of hours of a student's work	25					25					h
10.	Punkty ECTS za modul <i>1 ECTS=25 hours</i>	1										ECTS

LITERATURE

1. Singh D. K. (2021), *Strength of materials*, 4th edition, Springer Nature: Ane Books Pvt. Ltd.
2. Raghu Kumar B. (2022), *Strength of materials*, 1st edition, CRC Press.
3. Websites indicated at the lecture by the module coordinator.