



COURSE SPECIFICATION

Course code	M#1-S1-ME-106
Course title in Polish	Fizyka Techniczna
Course title in English	Technical Physics
Valid from (academic year)	2019/2020

GENERAL INFORMATION

Programme of study	MECHANICAL ENGINEERING
Level of qualification	first-cycle
Type of education	academic
Mode of study	full-time
Specialism	all
Department responsible	Department of Mechanics
Course leader	dr Małgorzata Błasiak
Approved by	

COURSE OVERVIEW

Course type	basic
Course status	compulsory
Language of instruction	English
Semester of delivery	semester 1
Pre-requisites	None
Examination required (YES/NO)	YES
ECTS value	4

Mode of instruction	lecture	class	laboratory	project	seminar
No. of hours per semester	15	15	15		

LEARNING OUTCOMES

Category of outcome	Out-come code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	Has knowledge in the field of physics, including mechanics, kinematics, optics, electricity and magnetism, in particular the knowledge necessary to understand the basic physical phenomena occurring in all types of machines and mechanical devices, including systems enabling the shaping and processing of various types of materials and in vehicles and systems related to weapon technology.	MiBM_W02
	W02	Has elementary knowledge of methods of measuring basic physical, mechanical and electrical quantities, knows the computational methods and IT tools necessary to analyze the results of the experiment.	MiBM_W13
Skills	U01	Can use the learned principles and physical laws to solve simple problems in mechanics and machine construction. Can describe simple physical phenomena using mathematical equations in the description.	MiBM1_U01
	U02	Can perform basic measurements of physical, mechanical and electrical quantities.	MiBM1_U11
Competence	K01	He can work in a team.	MiBM1_K04

COURSE CONTENT

Type of instruction*	Topics covered
lecture	Physics as knowledge about the world - from the microworld to the macrocosm. Physics and mathematics. Dimensions of physical quantities, the SI system. History of Physics. Technique as knowledge based on Physics. Fundamentals of mechanics, phenomena: thermal, electrical, magnetic, wave, phenomena and optical instruments. Solids, their crystal structure and lattice defects. Fundamentals of the physics of the microworld and special relativity. Nuclear physics, elementary particles.
class	Solving problems within the scope of the lecture.
laboratory	Performing 6 laboratory exercises: - determination of the viscosity coefficient of liquids based on Stokes's law, - determination of the acceleration due to gravity, - determination of the density of solids, - thermoelectric phenomena in solids, - measurement of resistance using the technical method, - measurement of the dependence of semiconductor resistance on temperature. Optional: - determining the focal length of lenses.

*) Please delete rows in the table above that are not applicable.

ASSESSMENT METHODS

Outcome code	Methods of assessment <i>(Mark with an X where applicable)</i>					
	Oral examination	Written examination	Test	Project	Report	Other
W01		X				
W02		X				
U01			X			
U02					X	X
K01						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction*	Assessment type	Assessment criteria
lecture	examination assessment	The pass mark is a minimum of 50% for the final in-class test.
class	non-examination assessment	Attendance. Obtaining at least 50 points from 2 tests.
laboratory	non-examination assessment	Attendance. Obtaining at least 50 points from each ticket. Obtaining positive ratings from all reports.

*) Please delete rows in the table above that are not applicable.

OVERALL STUDENT WORKLOAD

ECTS weighting							
	Activity type	Student workload					Unit
		L	C	Lab	P	S	
1.	Scheduled contact hours	15	15	15			h
2.	Other contact hours (office hours, examination)	4	2	2			h
3.	Total number of contact hours	53					h
4.	Number of ECTS credits for contact hours	2,1					ECTS
5.	Number of independent study hours	47					h
6.	Number of ECTS credits for independent study hours	1,9					ECTS
7.	Number of practical hours	64					h
8.	Number of ECTS credits for practical hours	2,6					ECTS
9.	Total study time	100					h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	4					ECTS

READING LIST

- Halliday D., Resnick R., Walker J.: Podstawy Fizyki. PWN 2015.
- Orear J.: Fizyka. WNT 2015.
- Feynman R. P., Leighton R. B., Sands M.: Feynmana wykłady z fizyki. PWN 2019.
- Błasiak M., Takosoglu J.: Materiały do laboratorium z fizyki, PŚk 2018.