

COURSE DESCRIPTION CARD – SPECIMEN

Białystok University of Technology										
Field of study	EE							Degree level and programme type	Bachelor's degree full-time programme	
Specialization/ diploma path	-							Study profile	academic	
Course name	Physics E							Course code	EE1S11002	
								Course type	obligatory	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	1	
	15	15	30					No. of ECTS credits	4	
Entry requirements	-									
Course objectives	Understanding of basic phenomena and physical processes occurring in nature, especially in environmental engineering. Acquires the ability to measure physical quantities, operate measuring instruments, develop results and determine uncertainty. Developing the ability to use the laws of nature in technology and in everyday life.									
Course content	<p>Lecture</p> <p>Fundamentals of classical mechanics, conservation of momentum and angular momentum. Liquids. Vibrating movement. waves. Fundamentals of thermodynamics. Elements of the kinetic theory of gases. Electric and magnetic field. Electromagnetic waves - polarization, interference, diffraction, photoelectric effect. Elements of nuclear physics, natural and artificial radioactivity.</p> <p>Classes</p> <p>Classical mechanics - problems. Principles of conservation of momentum and angular momentum - tasks. Liquids-tasks. Vibrating motion, pendulum, damped vibrations, forced tasks. Wave length, wavefront, Doppler effect - tasks. Solving problems using the principles of thermodynamics. Gas, ideal gas - tasks. Electric and magnetic fields - tasks. Electromagnetic waves - tasks. Elements of nuclear physics – tasks</p> <p>Laboratory</p> <p>Learning to use measuring instruments, carrying out experiments on selected phenomena discussed in lectures and classes, determining uncertainty, elaborating the results of experiments in the form of reports.</p>									

Teaching methods	lecture, classes, laboratory	
Assessment method	lecture – written exam, classes – test, laboratory-tests preparation for laboratory classes, evaluation of reports	
Symbol of learning outcome	Learning outcomes	Reference to the learning outcomes for the field of study
EU1	Knows and understands selected issues in physics that are the basis of processes occurring in environmental engineering .	IS1_W02 IS1_W04 IS1_U01 IS1_U14
EU2	Knows how to use analytical methods to model the course of physical phenomena, properly select and use the known methods and tools, including simulation and experimental ones .	IS1_W02 IS1_U03 IS1_U05
EU3	Knows how to plan and carry out experiments, interpret the results obtained and draw conclusions using various sources .	IS1_U07 IS1_U14 IS1_W02 IS1_U16 IS1_K01
EU4	Is ready to explain cognitive and practical problems in the field of discussed physical issues, knows, understands and observes health and safety regulations.	IS1_K03 IS1_K07
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
EU1	written exam and colloquium	L, C
EU2	colloquium, raport	C, Lc
EU3	assessment of preparation for conducting the experiment, report	Lc
EU4	Written exam, colloquium, assessment of preparation for the experiment, report	L, C, Lc
Student workload (in hours)		No. of hours
Calculation	attendance on lecture	15
	attendance on classes	15
	attendance on laboratories	30
	preparation for exercises, laboratories and homework, preparation of reports	25
	preparation for the exam and presence on it (9+1H exam)	10
	participation in consultations	5

	TOTAL:	100
Quantitative indicators		HOURS
		No. of ECTS credits
Student workload – activities that require direct teacher participation		66
Student workload – practical activities		85
Basic references	1. D. Halliday, R. Resnick, J. Walker, Fundamentals of physics, tenth edition, 2007, Wiley, and newer 2. Young H.D., Freedman R.A. Sears and Zemansky's University Physics: with Modern Physics (11th edition). International Edition. 2004 3. W.E. Gettys, F.J. Keller, M.J. Skove: Physics: classical and modern. N.Y., 1989 4. G.D. Freier: University physics: experiment and theory. N.Y., 1979	
Supplementary references	1. L. Jacak: Short lecture on general physics, Wroclaw, 1999 2. K. Cummings: Understanding physics, N.Y., 2004 3. I.V. Savelyev: Questions and problems in general physics, Moscow, 1984	
Organisational unit conducting the course	Department of Spatial Economy and Energy-Efficient Construction	Date of issuing the programme
Author of the programme	Agnieszka Tereszkievicz, PhD	07.02.2019

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

S – seminar