

DESCRIPTION OF THE STUDY SUBJECT

Title

PHYSICS

Scope of the subject

Semester	Mode of studies	Structure*					Total number of hours	Number of credits	Group and type of subjects
		L	PS	C	Lw	S			
I	Full-time	24	18	12	24	79	157	6	Compulsory subjects of the study field
I	Part-time	12	8	42	16	79	157	6	

*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

Aim of the subject

To apply basic knowledge of mechanics, electricity, semiconductor physics required for electrotechnics, electronics, optics and other subjects related to physics, to solve problems and, doing laboratory work, to logically simulate the sequence of operations, this way enabling to work independently and make decisions.

Necessary background knowledge for studying the subject

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Content of the subject

Title of the topic and description of the content	Number of contact hours				S	Total number of hours
	L	PS	C	Lw		
1. Achievements in the science of physics and future challenges in Lithuania and the world. The system of units SI. Kinematics of reciprocating motion of the material point. Reference systems. Speed, acceleration.	3	2	1	-	2	8
Laboratory work. Assessment of direct and indirect measurement errors.	-	-	-	2	2	4
Laboratory work. Study of spring pendulum oscillations.	-	-	-	2	2	4
2. Basics of molecular-kinetic theory of ideal gas. Ideal gas. Equation of state, their laws, izoprocesses. Transference phenomena.	2	-	1	-	4	7
Laboratory work. Identification of thermal expansion coefficient of solid bodies.	-	-	-	2	2	4
3. Real gases. Internal energy of gas.	2	-	1	-	2	5
Laboratory work. Identification of temperature coefficient of resistance of metals.	-	-	-	2	2	4
4. Basics of thermodynamics. Cyclic processes.	2	2	1	-	4	9
Test	-	2	1	-	3	6
5. Electrostatics. Electric charge, Coulomb's law. The electric field potential. Constant current.	3	-	1	-	4	8
Laboratory work. Measurement of electrical quantities and measurement errors.	-	-	-	2	1	3
Laboratory work. Measurement of resistance using the Wheatstone bridge.	-	-	-	2	2	4
Laboratory work. The study of the potentiometer.	-	-	-	2	1	3
6. Magnetism, its characteristics. The Ampere and Lorentz force. Work. The magnetic field energy.	3	3	2	-	4	12
Laboratory work. Study of the oscilloscope.	-	-	-	2	2	4
7. Electromagnetic oscillations and waves. Induction. Alternating current its receiving, parameters.	3	4	1	-	4	12
8. Basics of geometrical optics. Spread of light by fibre.	2	2	1	-	4	9
Laboratory work. Identification of the focal length of lenses.	-	-	-	2	2	4
9. Elements of semiconductor physics.	4	3	2	-	4	13
Laboratory work. The study of rectifier of the AC of the semiconductor.	-	-	-	2	3	5
Laboratory work. Study of the solar battery.	-	-	-	4	4	8
Preparation and taking the exam					21	21
Total number of hours	24	18	12	24	79	157

Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade consists of the marks for intermediate accountings and examination (E) multiplied by weighted coefficients. $ICI = 0,4 E + 0,4 Lw + 0,2 T$, Lw – laboratory works, T – test.

Recommended literature

Key literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house	Number of copies and/or internet link		
				ŠSSC library	Other premises	Other libraries *
1.	2011, 2010	Bogdanovičius A. Fizikos pagrindai inžinerijoje. 1-2 d.	Technika	4	-	8
2.	2008	Martinėnas B. Fizika	Technologija	2	-	8
3.	2007	Stasiūnienė I. Fizikos laboratoriniai darbai	Šiaulių kolegijos leidybos centras	120	-	4
4.		Bogdanovičius A. Fizikos pagrindai inžinerijoje. I-II d	VG TU	http://ezproxy.svako.lt:2068/product/fizikos-pagrindai-ininerijoje-1-2-dalis		
5.		Liudvikas Augulis, Alvydas Jotautis ir kt. Fizika: mechanika, termodinamika, elektromagnetizmas	Technologija	http://www.ebooks.ktu.lt/eb/656/fizika_mechanika_termodinamika_elektromagnetizmas/		
Additional literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house and/or internet link			
1.	2011	Šatkovskis, E., Stupakova, J., Gradauskas, J., Sužiedėlis, A., Mitkevičius, R.,. 2011 Sensitivity improvement in porous silicon microwave detector. Lithuanian Journal of Physics. Vol. 51, no. 2, p. 143-146.	www.itpa.lt/LFD/Lfz/LFZ.html			
2.	2005	Požėla I., Sukackas V., Radvilavičius Č. Fizika. Elektromagnetizmas, optika, atomo fizika.	Technologija			
3.	2004	Tamašauskas A., Tamulevičius S. Fizikos laboratoriniai darbai.	Technologija			

* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

Required material resources and their short description

<ul style="list-style-type: none"> Equipment (devices): a computer with Internet access, multimedia projector, laboratory equipment for performance of laboratory works of mechanics, thermodynamics, optics, electrodynamics, semiconductor physics.

The description prepared by:

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