RTU Course "Physics"

14504 Materiālu fizikas katedra

General data

Code	MFB101
Course title	Physics
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Physics
Responsible instructor	Knite Māris
Academic staff	Klemenoks Igors Vītiņš Visvaldis Ķiploka Aleksandra Ozols Kaspars Grickus Armands Lukse Silvija Miglāns Vladimirs Kaldre Imants Rēvalde Gita Eriņš Aivars Blūms Juris
Volume of the course: parts and credits points	2 parts, 6.0 Credit Points, 9.0 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Maximum auditorium capacity	30
Maximum number of students per semester	200
Abstract	Physics is closely related to the natural sciences, leads to the new multidisciplinary research directions - biophysics, material science, physical chemistry. Physics is also the basis for engineering. Directly from the development of physics the technical level of production is dependent on. All this points to the fact that the physics course at the technical universities have a special meaning. Physics course for engineers is a fundamental theoretical training base, without which the further success of the engineer is not possible. Course of study based on the School of Mathematics, provides the theoretical basic knowledge of mechanics, molecular physics and thermodynamics, electromagnetism, wave and quantum optics, quantum mechanics, solid state physics, atomic physics, nuclear, and particle physics. In the frame of the course practical skills of solving methods as well as experimental work skills and the experimental results of mathematical processing basics are acquired. The course consists of lectures with practical examples and laboratory work.
Goals and objectives of the course in terms of competences and skills	To master the theoretical knowledge and practical skills in physics at university, using elements of higher mathematics. Develop physical and technical perception and logical thinking. Orient the classical physics and the latest breakthroughs in physics and their application of various technical problems, including high-value technology. Able to demonstrate the theoretical physics question the commitment to the practice, as well as being able to solve relatively Standard practical problems in physics. Able to carry out physics experiments, mathematical processing of obtained experimental results, to proceed the analysis of the obtained results and to make conclusions.
Structure and tasks of independent studies	Independent study of textbooks and solution of the practical exercises. The preparation of the theoretical introduction for each laboratory work, the mathematical processing of the laboratory work and concluding reports preparation.
Recommended literature	1. Fizika. Red. A.Valters. Rīga: Zvaigzne, 1992. 643 lpp. 2. Apinis, A. Fizika. Rīga: Zvaigzne, 1972. 706 lpp. 3. Grabovskis, R. Fizika. Rīga: Zvaigzne, 1983. 645 lpp. 4. Hugh D. Young, Roger A. Freedman. University Physics. USA, QC21.2Y67, 2000, 1513 p. 5. Halliday, D., Resnick, R., Walker, J. Fundamental of physics. 8th ed., USA, QC21.3H35, 2008, 1334 p. 6. Volkenšteine, V. Uzdevumu krājums fizikā. Rīga: Zvaigzne, 1968. 353 lpp. 7. Fizikas uzdevumu risināšana. Red. A.Valters. Rīga: Zvaigzne, 1982. 175 lpp. 8. Novērojumu un mērījumu rezultātu matemātiskās apstrādes pamati: metodiski norādījumi laboratorijas darbu veikšanai. Sast. A.Valters, N. Zagorska. Rīga: RTU, 1991. 25 lpp. 9. Uzdevumu krājums vispārīgajā fizikā. M. Jansone, A. Kalnača, J. Blūms u.c. Rīga: RTU, 2000, 247 lpp. 10. Fizikas praktikums tehniskās universitātes studentiem. I. Klincāre, M. Jansone, A. Ķiploka u.c. Rīga: RTU, 2001,189 lpp. 11. Fizikas praktikums tehniskās universitātes studentiem. M. Jansone, I. Klincāre, A. Ķiploka u.c. Rīga: RTU, 2003. 172 lpp. 12.Uzdevumu krājums vispārīgajā fizikā. Red. A. Ozols. Rīga: RTU, 2006. 273 lpp.
Course prerequisites	Physics, chemistry and mathematics in high school level course, Elements of higher mathematics.

Course outline

Theme	Hours

Learning outcomes and assessment

Learning outcomes	Assessment methods

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	4.5	2.0	0.0	1.0		*	
2.	3.0	4.5	2.0	0.0	1.0		*	