

Study Program: Informatics			
Type and level of studies: Bachelor studies			
Course name: Physics for Information Science			
Lecturer: Gulan R. Ljiljana			
Status: Compulsory			
ECTS: 6			
Attendance Prerequisites: /			
Course aims Understanding basic concepts of physics relevant for understanding the functioning of information technology devices.			
Course outcome Understanding the basic laws of physics, especially those related to electromagnetism, semiconductor components, basics of electrotechnics, EM waves, optics and laser physics. The students are able to use measuring instruments and devices. Linking the knowledge about different branches of physics and understanding the principles of informational devices functioning.			
Course content <i>Theoretical part</i> The subject of study and the significance of physics. Matter: substance and field. Substance: form, composition. Motion. Force. Newton's laws. Field. Energy. Conservation of energy. Electric charge and electric field. Electric potential. Energy in the electric field. Capacitors. Electric current. Ohm's law. Resistance. Electric power. Semiconductors. Semiconductor components: diode, bipolar and MOS transistor. Basics of electrotechnics: Electronic circuits, multivibrators, logic circuits, arithmetic circuits, memories. Integrated circuits and microelectrotechnics. Magnetism. Magnetic field of a conductor. Magnetic force on a current carrying conductor. Magnetic field in the presence of substance, ferromagnetism. Electromagnetic induction. Alternating current. Three-phase electric power systems. Rotating EM Field. Synchronous and asynchronous motors. Electrical oscillations. Tesla transformer. Hertz's experiments. Electromagnetic waves. Basics of radio technique engineering. Microphone and speaker. The motion of charge in electromagnetic field. Electron lenses. Cathode ray tube. LCD, TFT vs plasma screens. The principles of image transmission, television. Radar. Basics of optics. Basics of laser physics. <i>Practical part</i> Calculation exercises: Solving simple tasks. Laboratory exercises: Chosen laboratory exercises.			
Literature 1. В. Вучић, Д. Ивановић: Физика I, II, Грађевинска књига, Београд. 2. М. Јакшић: Физика, Универзитет у Приштини, Приштина 1998. 3. С. Тешић, Д. Васиљевић: Основи електронике, Грађевинска књига, Београд 2002. 4. Д. Петковић: Физика за информатичаре, скрипта (PDF). 5. М. Одаловић: Задачи из електромагнетизма и оптике, скрипта. 6. Д. Петковић, М. Одаловић: Практикум лабораторијских вежби из физике, скрипта.			
Number of active classes			Other classes
Lectures: 2	Practical classes: 2	Other forms of teaching:	
			Students' research work
Teaching methods Lectures (3 classes per week), calculation exercises (2 classes per week) and laboratory exercises (1 class per week).			
Assessment (maximum 100 points)			
Course assignments	points	Final exam	points
activity during lectures	10	written exam	20
practical classes		oral exam	30
term test(s)	20	
seminar(s)	20		
Total	50		50