

Assessment and subject description

Óbuda University		Kandó Kálmán Faculty of Electrical Engineering			Institute of Microelectronics and Technology	
Subject name and code: Physics I. KMEFI11ANC				Credits: 4		
Course: Electrical engineering, Full-time, Semester 2012-2013/I.						
Responsible:	Dr. Ervin Rácz associate professor		Teaching staff:	Dr. Dorothy Sebestyén , docent Dr. Ervin Rácz , associate professor		
Prerequisites:		KMEMA21ANC (1)				
Contact hours per week:	Lecture: 2	Class discussion.: 0	Lab hours: 0	Tutorial: 0		
Assessment and evaluation:	Written exam					
Subject description						
<i>Aims:</i> Physics I. class gives basic knowlegde with concrete tematics for professional courses will be studied later time. The course helps better understanding technical problems using another way to approach the phenomena. Knowledges of Physics practices also helps solving problems for everyday life. Physics I. grounds course of Physics II. (modern Physics) with their practice-oriented topics.						
<i>Topics to be covered:</i>						
Topics				Week	Lessons	
Mechanics. Kinematics of particles. Problems.				1	2	
Projectile motions. Problems. Newton's laws. Momentum. Impulse-momentum theorem. Work and energy. Work-energy theorem. Conservation of energy. Power.				2	2	
Problems. Torque. Angular momentum. Angular momentum theorem.				3	2	
Mechanics of particle systems. Problems.				4	2	
Motion of the rigid body. Moment of inertia.				5	2	
Relative motions: inertial reference frames, motion in noninertial frames.				5	2	
Test #1. Oscillations. Damped oscillations. Forced oscillations. Resonance.				6	2	
Wave motion. Mechanics of fluids and gases.				7	2	
Elements of optics. Fermat's principle. Physical optics.				8	2	
Thermodynamics. Basic concepts of thermodynamics. Temperature scales and thermometers. Equations of state. Heat, heat capacities. The first law of thermodynamics. Thermal processes of ideal gas. Problems.				9	2	
Cyclic processes. The Carnot-cycle. Entropy. The second law of thermodynamics. Problems.				10	2	
Basics of statistical thermodynamics or the kinetic theory of gases. Statistical interpretation of the second law of thermodynamics. Distribution functions.				11	2	
Test #2. Theory of special relativity.				12	2	
Motion of charged particles in electromagnetic field.				13	2	
Assessment and evaluation:						
Written exam. Evaluation of the exam will be established by summation of points can be obtained for three parts: test #1, test#2 and the written exam using predefined score-table.						

Suggested material

1. Michael Mansfield, Colm O`Sullivan: Understanding Physics (John Wiley & Sons, Praxis, 1998. or newer edition)