

Assessment and subject description

Óbuda University Kandó Kálmán Faculty of Electrical Engineering		Institute of Microelectronics and Technology		
Subject name and code: Physics II., KMEFI21ANC		Credits: 4		
Full-time, Spring Semester: 2014-2015/II				
Course:				
Responsible:	Dr. Ervin Rácz Ph.D associate professor	Teaching staff:	Dr. Dorottya Sebestyén	
Prerequisites:		KMEFI11ANC		
Contact hours per week:	Lecture: 2	Class discussion: 0	Lab hours: 0	Tutorial: 0
Assessment and evaluation:	Written exam			
Subject description				
<i>Aims: to give stabile foundation to the professional subjects and to help to understand the physical basis of the professional literature in the future works.</i>				
<i>Topics to be covered: atomic physics; physics of condensed matter; nuclear physics and particle physics</i>				
Topics			Week	Lessons
The theory of special relativity			1.	2
The motion of charged particles in electromagnetic field. Examples				
At the boundary of the classical concepts (Black body radiation, photo effect, Compton effect, wave-particle duality)			2.	2
Classical models of atom (Rutherford's model, Bohr's model, quantum numbers, Pauli exclusion principle)			3.	2
Quantum mechanics (Heisenberg's uncertainty relation, Schrödinger equation, applications of Schrödinger equation.)			4.	2
Condensed matter physics (metallic bond). Examples			5.	2
Test #1. Hall effect Electronic band structure.			6.	2
			7.	
Fermi-Dirac statistics Thermoelectric effects. Magnetic properties.			8.	2
Piezoelectricity. Liquid crystals. Superconductivity, luminescence.			9.	2
Lasers Examples to the photo effect, Compton effect, de Broglie theorem			10.	2
Examples			11.	2
Test #2. Nuclear physics (structure of nucleus)			12.	2
Nuclear force, models Radioactive decay, nuclear fission, fusion			13.	2
Elementary particle physics (fundamental particles and interactions			14.	2
Assessment and evaluation				
Requirements of the signature: The absenteeism rate should not exceed 30% of the lectures and students must write both of test #1 and test #2.				
Type of exam: Written exam.				
Evaluation of the exam: It will be established by summation of points can be obtained for three parts: points to test #1 and test #2 – maximum of 10 +10 points; maximum of 50 points to the written exam				
Suggested material				
M. Mansfield, C. O`Sullivan: Understanding Physics (John Wiley & Sons, Praxis, 1998.)				
H. Young, R. Freedman: Sear's and Zemansky's University Physics with Modern Physics (Pearson, 2008)				