Curriculum and Requirements
Physical Basis of Information TechnologyGEFIT003M-a
2018/2019. 2. semester

Curriculum:

7. week An overview of electrodynamics. Maxwell equations.
8. week Dia-, para- and ferromagnetism. Exchange interaction.
9. week Magnetic hysteresis.
10. week Magnetic data recording.
11. week Test 1. Experimental basis of quantum physics, photoelectric effect.
12. week Bohr's postulates, de-Broglie hypothesis. Lab demonstration.
13. week Mathematical basis of quantum physics. The Schrödinger equation.
14. week Tunnel effect. Quantum statistics. Structure of atoms and molecules.
15. week Test 2. Fundamentals of solid state physics: Drude model
16. week Drude and Sommerfeld models.
17. week Band theory of solids.
18. week Semiconductors, diodes.
19. week Transistors. Superconductivity.
20. week Graphene and silicene. Test 3.

The requirements for signature and final examination:

1. students have to attend at least half of the lessons,
2. students have to pass on the tests.

If somebody does not obtain signature at the end of semester, because does not fulfil the first condition above, but the Dean of Faculty gives him or her the permission to get it, the student has to report from the whole subject at the lecturer.

If somebody does not get signature at the end of semester, because does not fulfil the second condition above, he or she can write a getting signature test, during the examination period, until a given date decided by the Dean of Faculty.

The students write three tests during the semester. Each test contains one topic from the full material of the appropriate part of the semester and multiple choice tests. The total score of the three tests is 100, and minimum 20 scores are necessary for the signature and 50 for the successful exam. In case of low number of obtained points, the tests can be repeated at the exam session. If the student asks, he or she can take an oral exam to obtain additional points and a better grade.

Books, recommended literature:

1. Halliday, Resnick, Walker: Fundamentals of Physics, John Wiley 1981., 2008., 2011.
2. D. Jiles: Introduction to Magnetism and Magnetic Material, Taylor &Francis, 1998.,
3. N. DasGupta-A. DasGupta: Semiconductor Devices, Modelling and Technology, PHI Learning, 2011.
4. N. Gershenfeld: The Physics of Information Technology, Cambridge University Press, 2000.
5. R. Waser: Nanoelectronics and Information Technology, Wiley, 2012.

Miskolc, 12. 02. 2019.

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