



COURSE DATASHEET

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| Semester: | 2014/15/2 |
| Course: | Introduction to physics |
| Code: | VEMKFI6122B |
| Responsible department: | Institute of Physics and Mechatronics |
| Department code: | MKFI |
| Responsible instructor: | dr. Csaba Németh |

Course objectives:

The main objectives of this pre-introductory physics course are: to repeat and summarize the basic concepts and principles of physics, especially the in the classical mechanics and the electromagnetism, and practice them via problem solving, which includes the essential mathematics as well.

Course content:

1. Vector and scalar quantities in the physics. 2. Kinematics I.: displacement, path, velocity, acceleration. 3. Kinematics II.: displacement, path, velocity, acceleration. 4. Newton's Laws. Force, linear momentum, movement on incline, masses on pulley, etc. 5. Work, energy. Kinetic energy. Conservation of mechanical energy. 6. Oscillatory motion. 7. Essay I. written: 5 problems, 90 minutes. 8. Mechanics of particle system: Center of mass, conservation of momentum, collisions, 9. Mechanics of rigid body. Rotation of rigid bodies around an axis. Combined movement: translational and rotational. 10. Fluid mechanics and waves. 11. Electricity: electric charges and electric field. 12. Electric current, simple circuits. 13. Magnetic field, induction. 14. Electromagnetic waves. 15. Essay II. written: 5 problems, 90 minutes.

Requirements, evaluation and grading:

Two successful essays.

Required and recommended readings:

Bármely középiskolai tankönyv és feladatgyűjtemény Baranyi Károly: A fizikai gondolkodás iskolája 1., 2., 3., Akadémiai Kiadó, Budapest