Introduction to Contemporary Physics I

Prof. Jan Mostowski

Mondays, 10 am till 12 pm, building 15, upper floor.

Syllabus

1. Motion, motion of planets
2. Dynamics, Newton's equations, examples
3. Conservation laws (momentum, energy, angular momentum)
4. Newton's law of gravity, the two body problem,
5. Other problems in mechanics, chaotic motion
6. Electric and magnetic field, motion of a charged particle in electromagnetic field
7. Maxwell's equations, physical interpretation
8. Electromagnetic waves, diffraction, geometrical optics
9. Electromagnetic field in matter, electromagnetic waves in material media, causality,
10. Nonlinear effects in classical electromagnetism,
11. Relativistic invariance of electrodynamics, relativistic kinematics
12. Relativistic mechanics - outline
13. Effects of general relativity - perihelion motion of Mercury, red shift