Course Profile - Department of Physics

Course Number : PHYS 203	**Course Title :** General Physics III
Required / Elective : Required	**Pre / Co-requisites :** -
Catalog Description: Oscillations, gravitation, fluid mechanics, wave phenomena, temperature and thermodynamics, traveling waves, principle of superposition, modulations, pulses and wave packets, electromagnetic waves, reflection, refraction, interference, diffraction and polarization, interferometry.	**Textbook / Required Material :** Douglas C. Giancoli, *Physics for Scientists & Engineers with Modern Physics, Fourth Edition,* Pearson Prentice Hall, 2009.
Course Structure / Schedule : (3+0+2) 4 / 7 ECTS	
Extended Description : Gravitation and Newton's Synthesis: Law of Universal Gravitation, Keppler's Law; Fluid Mechanics: Pressure in Fluids, Pascal's Principle, Buoyancy and Archimedes' Principle, Bernoulli's Principle; Oscillations: Simple Harmonic Motion, Damped Harmonic Motion, Forced Oscillations (Resonance); Wave Motion: Transverse and Longitudinal Waves, Standing Waves; Sound Waves: Mathematical Representation, Sound Intensity, Interference of Sound Waves (Beats); Temperature and the Ideal Gas Law, Kinetic Theory of Gases: Molecular Interpretation of Temperature; Heat and the First Law of Thermodynamics,: Internal Energy, Specific Heat, Latent Heat, Equipartition of Energy, Adiabatic Expansion of a Gas; Second Law of Thermodynamics: Entropy, Heat Engines, Maxwell's Equations and Electromagnetic Waves, Light: Reflection, Refraction, Interference, Diffraction and Polarization.	
Design content : None	**Computer usage**: Students use computational and graphics software in the analysis of interference of waves.
Course Learning Outcomes [relevant program outcomes in brackets]**:** On successful completion of this course students will be able to 1. demonstrate a conceptual understanding of the fundamental physical laws involving gravitation, wave phenomena, fluid mechanics, and thermodynamics [1, 2]; 2. recognize how the fundamental physical laws can be applied to solve a variety of problems [6]; 3. analyze the properties of gasses from the point of view of kinetic theory [6]; 4. make a distinction between the concepts of heat and temperature [1, 7]; 5. devise how the concept of entropy arises from the laws of thermodynamics [1]; 6. describe Maxwell's equations and electromagnetic waves [1]; 7. explain laws of reflection, refraction, interference, diffraction and polarization [1]; 8. discuss how physics is relevant to the world around them [6, 10].	

Recommended reading

Feynman, R.P., Leighton, R.B., Sands, M. *The Feynman Lectures on Physics, Volume I, II,* Addison Wesley, 1966.

Teaching methods

Lectures and exercise sessions of approximately 5 hours per week; pre-readings and homework problems.

Assessment methods:

Two mid-term examinations, a final examination, weekly homework assignments, and quizzes.

Student workload:

Pre-reading	5 hrs
Lectures, discussions	45 hrs
Exercise sessions	30 hrs
Homework	27 hrs
Independent work	64 hrs
Laboratory work	0 hrs
Examinations	4 hrs
TOTAL …… 175 hrs … to match 25 x 7 ECTS	

Prepared by : İsmail Karakurt , 01.02.2010	**Revision Date :**