

**PHYSICS 210**  
**(3.0; 3 credits)**

**Contents:**

- 1. Fluid Statics**  
Fluids and Solids  
Variation of pressure in a fluid at rest  
Pascal's Principle and Archimede's Principle  
Pressure Measurement  
Surface Tension
- 2. Fluid Dynamics**  
General Concept of Fluid Flow  
Equation of continuity  
Bernoulli's equation and applications  
Fields of flow  
Viscosity, Turbulence and Chaotic Flow
- 3. Temperature**  
Zeroth Law of Thermodynamics  
Absolute Temperature Scale  
Thermal Expansion  
Ideal Gas
- 4. Heat and First Law of Thermodynamics**  
Heat Internal Energy  
Heat capacity, Latent Heat  
Thermodynamic Process  
First Law of Thermodynamic  
Application of the First Law  
Energy Transfer
- 5. Kinetic Theory of Gases**  
Molecular Speed and Molar Specific Heat  
Adiabatic Processes  
Equipartition of Energy  
Boltzmann Distribution  
Distribution of Molecular Speed

**6. Heat Engines, Entropy and Second Law of Thermodynamic**

Heat Engines & Second Law of Thermodynamics

Reversible & Irreversible Processes

Carnot Engines

Gasoline & Diesel Engines

Heat pumps & Refrigerators

Entropy and Entropy Change

Entropy on Microscopic Scale

**7. General Properties of waves**

Basic Variables of Wave Motion

Superposition & Interference

Sinusoidal Waves

Energy Transfer by Waves

Linear Wave Equation

**8. Sound Waves and Resonances**

Periodic Sound Waves

Spherical & Plane Waves

Doppler Effect

Superposition & Interference of Sinusoidal Waves

Resonances

Standing Waves

Non-Sinusoidal Waves

**9. Light and Optics**

Nature of Light

Measuring Speed of Light

Reflection, Refraction

Huygen's Principle

Fermat Principle

**10. Interference**

Double-Slit Experiment

Interference Pattern

Phase Addition of Waves

Michelson Interferometer

**11. Diffraction and Polarization**

Single-Slit Diffraction

Diffraction Grating

Diffraction of X-Rays

Polarization of Light Waves

