



**University of
Technology**

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Syllabus

Course Outcomes

Of

Department of Physics

Department of Physics

BPCM 105	Mechanics & Oscillations	Demonstrate and evaluate the mechanical behavior of real-world objects through practical experimentation. Determine and compare different types of oscillations and understand how different waves travel in space using their different modes of oscillation
BPCM 106	Electromagnetism	Describe and differentiate between scalar and vector fields, and apply these concepts to problems in Electromagnetism and Analyze magnetostatics and the behavior of magnetic fields in different materials, and relate these to real-world applications.
BPCM 107	Optics	Describe the principles of polarization and apply techniques to analyze polarized light and optical devices that utilize polarization, Understand and discuss concepts in quantum optics, including photon behavior and quantum phenomena related to light
BPCM 205	Thermodynamics and Statistical Physics	Able to apply classical and quantum statistical mechanics to analyze particle systems, including the derivation and application of statistical distributions and thermodynamic properties, Describe and analyze the distribution of molecular velocities in gasses using the Maxwell-Boltzmann distribution and related concepts
BPCM 206	Mathematical Physics and Special Theory of Relativity	Describe and apply the transformations of electric and magnetic fields between different inertial frames of reference according to special relativity, Solve the Laplace equation in various coordinate systems and apply boundary conditions to find solutions relevant to physical problems
BPCM 207	Electronics and Solid State Devices	Integrate knowledge of electronics and solid-state devices to design and troubleshoot complex electronic systems, applying principles from circuit analysis to practical device applications

BPCM 305	Quantum Mechanics & Spectroscopy	Apply principles of atomic spectroscopy to understand the emission and absorption spectra of atoms and molecules, Explore molecular spectroscopy concepts, including the techniques used to study molecular energy levels and transitions, and their applications in analyzing molecular structures
BPCM 306	Nuclear and Particle Physics	Understand and apply the concepts of fundamental interactions and explain particle behavior interactions, Identify and characterize elementary particles, including their properties, classification, and the role they play in fundamental physics
BPCM 307	Solid State Physics	Understand and evaluate the electrical, thermal, and magnetic properties of materials, including their practical applications, Explore the phenomenon of superconductivity, including its principles, characteristics, and technological applications