

## DEPARTMENT OF PHYSICS

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### **SEMESTER I**

#### **SBSPHY101 Classical Mechanics and Optics**

##### Course Objective

1. Provide in-depth knowledge of mechanical systems, conservation laws involving energy, momentum, etc.
2. To study the elastic behavior and fluid mechanics
3. To learn the theory and experiment of interference
4. To analyze the Zeroth law of thermodynamics and entropy

##### Course Outcomes:

On successful completion of this course students will be able to:

1. Understand Newton's laws and apply them in calculations of the motion of simple systems.
2. Use the free body diagrams to analyze the forces on the object.
3. Understand the concepts of friction and the concepts of elasticity, and fluid mechanics and be able to perform calculations using them.
4. Understand the concepts of lens system and interference.
5. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.

## **SEMESTER - I**

### **SBSPHY102 Modern Physics**

#### Course Objective:

1. To learn and explore the concepts of fundamentals of nuclear and particle physics
2. Learn the properties of X – Rays, verify Bragg's equation, Compton effects
3. Recognizing the relation between particle and matter, analyze the idea of nucleus and their energy, nuclear fission and fusion.

#### Course Outcomes:

After successful completion of this course, students will be able to

1. Understand nuclear properties, nuclear behavior, type of isotopes, and their applications.
2. Understand and analyze the fundamental building blocks of matter and radiation, interaction among elementary particles, and their behavior.
3. Understand the applications of X – Rays diffraction in crystals, and apply quantum mechanical concepts.

## **SEMESTER II**

### **SBSPHY201 (Mathematical Physics, Electricity & Electronics)**

Course Objective:

1. To learn methods of mathematical physics and develop skills to solve problems.
2. Explain electrical circuits, constructions of network theorems, and their uses.
3. To foster a digital attitude, provide in-depth knowledge of electronics components and circuits

Course Outcomes:

On successful completion of this course students will be able to:

1. Understand the basic mathematical concepts and applications of them in physical situations.
2. Demonstrate quantitative problem-solving skills in all the topics covered
3. Understand and apply the basics of electronics and create a working model

## **SEMESTER II**

### **SBSPHY202 (Analog Electronics, Electricity and Applied Physics)**

Course Objective:

1. Provide the fundamental skills to understand the basics of semiconductor components like diodes, transistors, relations between current amplification factors, the importance of biasing, and feedback circuit
2. Analyze the relation between conductors, insulators, and in-depth knowledge of material science
3. Learn the basic laws of electrostatics and magnetostatics

Course Outcomes:

1. Understand different biasing techniques to operate the transistor and analyze its stability.
2. Applying basic laws of electrostatics and magnetostatics to demonstrate quantitative problem-solving skills.
3. Understand the basics of crystallography, electrical properties of metals, band theory of solids, types of materials, and superconductivity.