Dr. Bhimrao Ambedkar University, Agra

Department of Physics, Institute of Basic Sciences

Value-Added Courses on (Magic of Materials)

Developed By: Prof (Dr.) B.P. Singh

Duration 30 Hours

Course Overview:

This course provides a comprehensive understanding of the basics of materials. In this course gives information about different material types, their properties and Applications of materials. This course aims to familiarize students with the concepts of reducing plastic waste and provides practical strategies for adopting more sustainable practice and emphasize the importance of individual actions combating plastic pollution and provides simple steps that students can implement in their daily lives.

Objectives of the Course

- Introduction- Spark students Curiosity and interest in materials by highlighting its real-world applications and relevance.
- Explore the processes involved in creating, both natural and synthetic
- Raise awareness among students about the importance of sustainable materials
- Create an understanding of the environmental impact of plastic.
- Career Exploration in materials science and inspire students to consider future educational and Professional paths in the field.

I. Introduction and Types of Materials (7 hours)

- Definition of materials and their importance in everyday life
- Examples of common materials around us.
- Natural Materials
- Synthetic Materials
- Introduction to metals, Ceramic and Composites

II. Properties and Application of Materials (8 hours)

- Physical, Mechanical, Thermal and Electrical Properties

- Materials in Everyday Objects
- Materials in Technology
- Materials in Construction

III. Materials Recycling and Sustainability (6 hours)

- Importance of recycling materials
- Example of recycling common materials
- Benefits of using sustainable Materials
- Choosing the right material for specific purposes
- Factors to consider when selecting materials

IV. Plastic – Free Living and Plastic Alternative (7hours)

- Introduction to the concepts of Plastic-free Living
- Exploring the 4R's. Refuse, Reduce, Reuse, Recycle
- Reusable water bottles, bags, and food containers
- Sustainable packaging options
- Eco-friendly personal options

V. Engaging Communities and Spreading Awareness (2 hours)

- Strategies for promoting plastics-free living in local communities
- Sharing success stories and case Studies