

# Personalized Learning Plan

## Create Study Schedule

### Study Plan

#### Week 1-2: Introduction and Course Objectives

- Introduction to the course and understanding the course objectives (COB1, COB2, COB3, COB4).
- Students will familiarize themselves with the resources available, including relevant illustrations, animations, web content, and practical examples.

#### Week 3-5: Module I: Classification of Materials

- Detailed study on the concept of amorphous, single crystals, and polycrystalline materials.
- Understanding the impact of crystallinity on physical properties.
- Learning about different types of materials like metal, ceramic, polymers, and the classification of polymers.
- Exploring the structure and properties of these materials, additives for polymer products, and the effect of the environment on materials.
- Introduction to composites.

#### Week 6-9: Module II: Properties of Materials

- Comprehensive study on various properties of materials.
- Mechanical properties including stress-strain response of different materials, yield strength, tensile strength, modulus of elasticity, toughness, plastic deformation, fatigue, creep, and fracture.
- Electronic properties such as Free electron theory, Fermi energy, density of states, band theory of solids, semiconductors, Hall effect, dielectric behavior, piezo, ferro, pyroelectric materials.
- Understanding the origin of magnetism in materials, para-magnetism, diamagnetism, ferro, and

ferrimagnetism.

- Thermal Properties: Specific heat, thermal conductivity and thermal expansion, thermoelectricity.
- Optical Properties: Refractive index, absorption and transmission of electromagnetic radiation in solids, electro-optic and magneto-optic materials.

#### Week 10-12: Module III: Crystallographic Structures and Imperfections

- Detailed study on crystal symmetry, point groups, space groups, indices of planes.
- Understanding close packing in solids, bonding in materials, coordination and radius ratio concepts.
- Point defects, dislocations, grain boundaries, surface energy, and equilibrium shapes of crystals.

#### Week 13-14: Revision and Assessment

- Revision of all modules.
- Practical examples and case studies for better understanding.
- Final assessment comprising objective and subjective questions based on all the modules.

Note: Regular quizzes and assignments will be conducted throughout the course to ensure constant progress and understanding of the modules.

## **End of Plan**

Thank you for using Aura's Learning Plan Generator!