

# AMID15 FUNDAMENTALS OF STRUCTURES

## UNIT-1 INTRODUCTION TO BUILT ELEMENTS

- 1.1 Study of built elements in the interiors with respect to materials used.
- 1.2 Basic construction methods and general specifications.
- 1.3 General types and classification of different types of buildings: overview of different functional, structural and architectural elements.

## UNIT-2 INTRODUCTION TO BASIC STRUCTURAL SYSTEMS

- 2.1 Elements of structure, their functions and behavior, beams, slabs, columns, walls, foundations, bearing wall systems, trusses, rigid frames, linear and curved elements,
- 2.2 Simply supported, cantilever and overhanging beams for various loads, effect of simple geometric forms in the overall structural behavior.

## UNIT-3 PRIMARY AND SECONDARY FORCES ACTING ON THE STRUCTURES

- 3.1 Gravitational force, live load, wind, temperature variation, distribution of loads through the elements of the structural system.

## UNIT-4 CHARACTERISTIC REQUIREMENTS OF STRUCTURAL DESIGN

- 4.1 Stress and strains, strength, stiffness and stability. Discussion on factors affecting them and the ways of satisfying these requirements. Study of behavior of structures through models and testing them for given loads.

## UNIT-5 STRUCTURAL PROPERTIES

- 5.1 Structural properties of basic materials like masonry, timber, concrete and steel etc. Light weight space structure, small and large scale surface structure, integrated display system and structural elements.

## UNIT-6 STRUCTURAL SYSTEMS AND THEIR LAYOUT FOR A SMALL BUILDING

- 6.1 Structural systems for elements of interior spaces – false ceilings etc.
- 6.2 Structural system for urban interior spaces – malls, fair grounds, exhibition spaces, etc.

### Reference Books:

1. Rowland J. Mainstone : Development of Structural Form Rangwala : Engineering Materials
2. S.P.Bindra, S.P.Arora, Building Construction
3. B.C. Punmia : Strength of Materials vol – I