AMAR-19 **DESIGN OF STRUCTURES - III**

OBJECTIVES:

To use limit state design for the analysis and design of columns.
To enable the learning of design of structural elements like footings, retaining walls and masonry walls.
To understand the principle, methods, advantages and disadvantages of pre stressed concrete.
Case studies and models applicable.

UNIT I LIMIT STATE DESIGN OF COLUMNS 10

Types of columns – Analysis and Design of Short Columns for Axial, Uniaxial and biaxial bending – Use of Design aids.

UNIT II DESIGN OF FOOTINGS 10

Types of footings – Design of wall footings – Design of Axially loaded rectangular footing (Pad and sloped footing). Design of Combined Rectangular footings.

UNIT III FLAT SLABS 10

Design Principles of flat slabs – Code Provision – Simple Design Problems

UNIT IV DESIGN OF MASONRY WALLS 8

Analysis and Design of masonry walls – use of Nomograms - code requirements.

UNIT V INTRODUCTION TO PRESTRESSED CONCRETE 7

Principle of Prestressing – Methods of Prestressing, advantages and disadvantages.

TOTAL: 45 PERIODS

OUTCOMES:

At the end of the course, the student should be able to:

Understand the different concepts in designing footings and columns and Masonry walls using LSD methods.

Concepts of Prestressed concrete and applying them in real case.

REQUIRED READING:

B.C. Punmia, “Reinforced Concrete Structures”, Vol. 1 & 2, Laxmi Publications, Delhi, 2004.
IS 456, “Indian Standard, Plain and Reinforced Concrete”, Code of Practice, Bureau of Indian Standards, 2000.
SP – 16, Design Aids for Reinforced Concrete to IS 456 National Building Code of India, 1983

IS 1905, Code of Practice for Structural Safety of Buildings, 1987.
Ashok K.Jain, “Reinforced Concrete:Limit State Design”, Nemchand, Bros Roorkee 1983.

REFERENCES:

P. Dayaratnam, “Design of Reinforced Concrete Structures”, Oxford and IBH Publishing CO., 1983.
N.C.Sinha and S.K.Roy, “Fundamentals of Reinforced Concrete”, S.Chand and Co., New Delhi, 1983.
Krishna Raj, “Prestressed Concrete Structures”, 3rd Edition, Tata McGraw Hill, 2005.