***4CE110 Design of Concrete Structures***

L-T-P-Cr: 3-1-0-3

**Theory:**

1 Design principles, working stress method ,ultimate load method and limit state design method ,design load consideration as per Indian codes ,Design of singly reinforced, doubly reinforced & T-Beams ,Design for flexure ,shear, Bond and Torsion. **12 Lectures**

2 Design of one and two- way slabs,

3 Design of Axial, Uniaxial and Biaxial columns. **10 Lectures**

4 Isolated and combined footings staircase and design of retaining walls. Detailing considerations, bond anchorage, shear and curtailments**. 10 Lectures**

5 Design of buildings frames for seismic loads, using approximate method of analysis and ductile detailing **10 Lectures**

**Text Books:**

1. N. Subramanian- Design of reinforced concrete structures, Oxford University press.

2. IS -456-2000 Code of Practise for plain and reinforced concrete.

3. P.Dayaratnam: Design of reinforced concrete structures, Oxford-IBM publications, NewDelhi.

4. S.N.Sinha :Reinforced concrete Design ,Tata Mcgraw hill New Delhi

5. IS – 102622-2009 Code of practise for mixing proportioning.

6. IS-456-2000 Code of practise for plain and reinforced concrete.