

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

**Interdisciplinary Electives Offered by
Applied Mechanics Department**

Civil Engineering (Computer Aided Structural Analysis & Design)

Subject Name Basics of Reinforced Concrete and Masonry Construction
(Interdisciplinary Elective - I)

Sr. No	Course content
1.	Concrete ingredients, testing and standards
2.	Concrete mix: Nominal mixes and design mixes, criteria of mix design
3.	Form work: types, usage and their suitability
4.	Concreting: Mixing, transporting, compacting, associated tests, Curing, Sampling, Cube tests and acceptance criteria
5.	Use of admixtures, ready mixed concrete, vacuum concrete, Cellular Concrete, Light weight concrete, Smart Concrete, Fibre Reinforced Concrete, Ferrocement, Polymer Concrete Composites, Self-Compacting Concrete, Fly Ash Concrete, High Performance Concrete.
6.	Steel: Types, tests and standards, binding, welds, bolts, rivets
7.	Masonry: Bricks, stone and hollow concrete blocks masonry, mortars, relevant tests, Earthquake resistant features of masonry
8.	Distress in structure: Causes and precautions, damage assessment of structural elements, repairing techniques and repairing materials.

List of Experiment:

Following shall be carried out in laboratory

1. Tests on cement
2. Tests on concrete
3. Tests on bricks
4. Non-destructive tests on concrete

Reference Books :

1. Concrete Microstructures, properties and materials - P Kumar Mehta and Paulo J. M. Monterio
2. Properties of concrete - A. M. Neville
3. Materials for construction - Lai, James, S.
4. Structural condition assessment - Robert T. Ratay
5. Handbook of retrofitting earthquake damaged buildings