**NBKR INSTITUTE OF SCIENCE & TECHNOLOGY :: VIDYANAGAR**

*(AUTONOMOUS)*

**CIVIL ENGINEERING**

SCHEME OF INSTRUCTION AND EVALUATION

(With effect from the batch admitted in the academic year 2013-2014)

**III YEAR OF FOUR YEAR B.TECH. DEGREE COURSE – I SEMESTER**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| S.  No. | Course  Code | Course Title | Contact  Hours/  Week | | | Credits | Evaluation | | | | | | | | | | | | |
| Sessional  Test-I | | | Sessional  Test-II | | | | Total Sessional Marks (Max. 40) | Semester  End Examination | | | Max.  Total Marks | |
| **THEORY** | L | P | T |  | Duration  in Hours | | Max.  Marks | Duration  in Hours | Max.  Marks | | 0.8(Better of two sessional tests)  +  0.2(Other) | | Duration  in Hours | Max.  Marks | |  | |
| 1 | 13CE3101 | Structural Analysis - I | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
| 2 | 13CE3102 | R.C.C. Structural Design – I | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
| 3 | 13CE3103 | Steel Structural Design | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
| 4 | 13CE3104 | Foundation Engineering | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
| 5 | 13CE3105 | Transportation Engineering - II | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
| 6 | 13CE3106 | Advanced Hydraulics | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | | 3 | | 60 | 100 | |
|  | | **PRACTICALS** |  |  | | | | | | | |  | | |  | | | | |
| 1 | 13CE31P1 | Soil Mechanics Laboratory | - | 3 |  | 2 | | - | - | - | - | | Day-to-day Evaluation and a test | | 3 | | 60 | | 100 |
| 2 | 13CE31P2 | Material Testing Laboratory | - | 3 |  | 2 | | - | - | - | - | | 3 | | 60 | | 100 |
|  |  | **TOTAL** | **20** | **06** | **04** | **28** | |  |  |  |  | |  | |  | | **800** |

**13CE3103 - STEEL STRUCTURAL DESIGN**

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| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | Structural Analysis I,Engineering mechanics, Engineering Mathematics-I&II. | **Sessional Evaluation :**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Outcomes** | CO1 | Be able to design riveted and welded connections. |
| CO2 | Be able to design tension and compression members. |
| CO3 | Be able to design laterally supported beams. |
| CO4 | Be able to design laterally unsupported beams like gantry girders. |
| CO5 | Be able to design slab bases, gusseted bases and grillage foundations. |
| **Course Content** | **UNIT – I**  **INTRODUCTION:** Properties of sections – Types of loads – Permissible stresses in tension, compression and shear as per IS code.  **RIVETED CONNECTIONS:** Types of Riveted Joints – modes of failure of riveted joints – Strength and efficiency of rivet – Strength of lap and butt joints – Design of riveted joints – Design of bracket connections (Beam to column and Beam to beam connections).  **WELDED JOINTS:** Types of welded joints – Strength of fillet and butt welds – Design of welded joints – Design of bracket connections (Beam to column and beam to beam connections).  **UNIT – II**  **DESIGN OF TENSION AND COMPRESSION MEMBERS:** Design of tension members – Lug angles – Tension splice. Design of compression members – Single and built – up columns – Design of lacing and battens – Design of eccentrically loaded columns – Column splicing.  **UNIT – III**  **LATERALLY SUPPORTED BEAMS:** Design of simple beams – Design of built up beams- Curtailment of flange plates – Connection of flange plate with flange of beam.  **UNIT – IV**  **LATERALLY UNSUPPORTED BEAMS:** Permissible bending compressive stress – Effective length of compression flange – Design of simple beams – Design of Gantry Girders.  **UNIT – V**  **DESIGN OF COLUMN BASES:** Slab base – Gusseted base – Bases subjected to moment – Grillage foundation. | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Design of Steel Structures by S.K. Duggel. 2. Design of Steel Structures by S.S. Bhavikatti.   **REFERENCE BOOKS:**   1. Design of Steel Structures Vol. I & II by Dr. Rama Chandra. 2. Limit State design Structural steel by M.R. Shiyekar. 3. Design of Steel Structures by N. Subramaniyan. | |