**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 – II SEMESTER**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | 13CE3201 | R.C.C. Structural Design - II | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 2 | 13CE3202 | Hydrology | 4 | - | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 3 | 13CE3203 | Structural Analysis -II | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 4 | 13CE3204 | Concrete Technology | 4 | - | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 5 | 13CE3205 | Environmental Engineering - I | 4 | - | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 6 | 13CE32EX | Elective –I | 4 | - | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
|  | | **PRACTICALS** |  |  | | | | | | | |  |  | | | |
| 1 | 13SH32P1 | Advanced Communication Skills Laboratory | - | 3 | - | 2 | - | - | | - | - | Day-to-day Evaluation and a test | 3 | 60 | | 100 |
| 2 | 13CE32P1 | Highway Materials Laboratory | - | 3 | - | 2 | - | - | | - | - | 3 | 60 | | 100 |
|  |  | **TOTAL** | **22** | **06** | **02** | **28** |  |  | |  |  |  |  | | **800** |

**Elective I:**

13CE32E1 Industrial Steel Structural Design

13CE32E2 Advanced Foundation Engineering

13CE32E3 Transportation Planning

13CE32E4 Industrial Waste and Waste Water Management

13CE32E5 Ground Water Hydrology

**13CE3201 – R.C.C. STRUCTURAL DESIGN – II**

|  |  |  |  |
| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | **R.C.C.Structural Design, Foundation Engineering** | **Sessional Evaluation :**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Outcomes** | CO1 | Be able to design rectangular and trapezoidal combined footings. |
| CO2 | Be able to design cantilever and counterfort retaining walls. |
| CO3 | Be able to design water tanks, spherical and conical domes. |
| CO4 | Be able to design circular slabs using yield line theory. |
| CO5 | Be able to calculate stresses for prestressed rectangular sections |
| **Course Content** | **UNIT – I**  **DESIGN OF FOUNDATIONS:** Design of combined footings (Rectangular and Trapezoidal).  **UNIT – II**  **DESIGN OF RETAINING WALLS:** Design of retaining walls – Cantilever and Counterfort types for different loadings.  **UNIT – III**  **DESIGN OF WATER TANKS:** Review of working stress design method – Circular and Rectangular tanks resting on ground – Circular tanks with IS code method and Rectangular tanks with Approximate method – Spherical and Conical domes – Design of Intze tanks.  **UNIT – IV**  **YIELD LINE THEORY:** Introduction – behavior of slab up to failure – assumptions – guidelines for predicting yield line pattern – yield criterion – methods of analysis and basic principles – virtual work – Equilibrium method – corner levers – circular slabs.  **UNIT – V**  **PRESTRESSED CONCRETE:** Principles of prestressing – Materials used – Methods and Systems of prestressing – Losses of prestress – Analysis of rectangular sections for stresses. | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Comprehensive RCC Designs by Dr. B. C. Punmia, A. K. Jain & Arun Kumar Jain. 2. Limit State Design (IS 456: 2000) by N. Krishna Raju & R. N. Pranesh. 3. Prestressed Concrete by N. Krishna Raju.   **REFERENCE BOOKS:**   1. Limit State Theory and Design of Reinforced Concrete by S. R. Karve & V. L. Shah. 2. Reinforced Concrete – Limit State Design by A.K.Jain. 3. RC Design by SN Sinha. | |