**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

**13CE3202 - HYDROLOGY**

|  |  |  |  |
| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | None | **Sessional Evaluation :**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |

|  |  |  |
| --- | --- | --- |
| **Course Outcomes** | CO1 | Be able to measure, analyze and estimate rainfall data. |
| CO2 | Be able to measure and calculate evaporation, transpiration, evapotranspiration and infiltration indices. |
| CO3 | Be able to determine runoff volume. |
| CO4 | Be able to analyze unit hydrograph method. |
| CO5 | Be able to perform flood routing by Pul’s and Muskingum methods. Be able to calculate the yield of aquifers |
| **Course Content** | **UNIT – I**  **INTRODUCTION:** Hydrologic cycle – Hydrologic data – Sources of Data.  **PRECIPITATION :** Precipitation – forms and types of precipitation – Measurement of precipitation – Mean precipitation over an area – Rain gauge network – Estimation of missing data – Double mass curve – Intensity – duration – frequency (IDF) curves.  **UNIT – II**  **ABSTRACTIONS:** Evaporation, Transpiration, Evapotranspiration – Factors affecting – Measurement – Methods for reduction – Infiltration – Measurement – Infiltration indices.  **UNIT – III**  **RUNOFF:** Runoff process – Factors affecting runoff – Drainage basin characteristics – Determination of run off – Run off formulae, tables – Stream gauging Yield – Flow duration curve – Flow mass curve.  **UNIT – IV**  **FLOODS:** Importance of flood studies – Methods of estimating flood peak – Empirical formulae – Rational method – Components of a Hydrograph – Base flow separation – Unit hydrograph – Derivation of unit hydrograph of different durations – Gumbel’s method of flood frequency analysis.  **UNIT – V**  **FLOOD ROUTING:** Basic equation – Types – Routing by Pul’s and Muskingum methods.  **GROUNDWATER:** Groundwater occurrence – Darcy’s law – Types of aquifers – Dupuit’s equation – wells – yield – recuperation test. | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Engineering Hydrology by Subramanya, K. 2. A Text Book of Hydrology by P. Jayarami Reddy.   **REFERENCE BOOKS:**   1. Hydrology by H.M. Raghunath. 2. Hydrology by Madan Mohan Das. 3. Hand Book of Applied hydrology by Ven Te Chow. | |