**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)

**IV YEAR OF FOUR YEAR B.TECH. DEGREE COURSE – I 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 | 13CE4101 | Environmental Engineering – II | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
| 2 | 13CE4102 | Irrigation & Hydraulic Struc.. | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
| 3 | 13CE4103 | Quantity Surveying & Valuation | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
| 4 | 13CE4104 | Construction Planning & Management | 3 | - | 1 | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
| 5 | 13SH4101 | Economics & Accountancy | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
| 6 | 13CE41EX | Elective – II | 4 | - | - | 4 | 2 | | 40 | 2 | 40 | 3 | 60 | 100 | |
|  | | **PRACTICALS** |  |  | | | | | | | |  |  | | | |
| 1 | 10CE41P1 | Concrete Technology Laboratory | - | 3 | - | 2 | | - | - | - | - | Day-to-day Evaluation and a test | 3 | 60 | | 100 |
| 2 | 10CE41P2 | Environmental Engineering Laboratory | - | 3 | - | 2 | | - | - | - | - | 3 | 60 | | 100 |
|  |  | **TOTAL** | **22** | **06** | **02** | **28** | | **12** | **320** | **12** | **320** | **24** | **480** | | **800** |

**Elective – II:**

13CE41E1 Prestressed concrete structures

13CE41E2 Advanced structural design

13CE41E3 Solid waste management

13CE41E4 Traffic engineering

13CE41E5 Applied soil mechanics

13CE41E6 Bridge engineering

**13CE4102 - IRRIGATION & HYDRAULIC STRUCTURES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | **Advanced Hydrology** | **Sessional Evaluation :**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Outcomes** | CO1 | Understand the basic terminologies of irrigation engineering. |
| CO2 | Be able to design lined channel. |
| CO3 | Be able to design weir on permeable foundation. |
| CO4 | Understand the planning and design methods of dams and reservoirs. |
| CO5 | Understand the hydraulic design principles of spillways. |
| **Course Content** | **UNIT – I**  **IRRIGATION ENGINEERING :** Benefits and ill effects of irrigation – Methods of irrigation – Quality of irrigation water – Duty and Delta – Irrigation efficiencies – Irrigation water requirements – Assessment of Irrigation water - Crop Seasons – Principle crops – Rotation of crops.  **UNIT – II**  **CANALS :** Classification of canals – Canal alignment – Kennedy’s and Lacey’s theories – Design – Balancing depth – Effects, causes and prevention of water logging – Types of lining – Design of lined canals – Canal outlets – Falls – CD works.  **UNIT – III**  **DIVERSION HEAD WORKS:** Location of diversion head works – Components – Causes of failure of weirs and remedial measures – Bligh’s and Khosla’s theories of design of weirs and permeable foundation.  **UNIT – IV**  **STORAGE HEAD WORKS:** Types of dams – Site selection and Reservoir Planning – Forces acting on and causes of failure of a gravity dam – Elementary and practical profiles – Stability analysis – Single and multiple step methods of design – Grouting – Multipurpose projects.  **UNIT – V**  **SPILLWAYS :** Requirements, components and types of spillways – Design principles of ogee spillway – Methods of energy dissipation below spillways – effect of TWC and JHC – Scour protection below spillways Stilling basins and appurtenances – Hydraulic design of energy dissipaters. | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Irrigation Engineering and Hydraulic Structure – P.N. Modi. 2. Irrigation Engineering and Hydraulic Structures – S.K. Grag.   **REFERENCE BOOKS:**   1. A text book of Irrigation Engineering and Hydraulic Structures – R.K.Sha. 2. Irrigation and water power Engineering – Dr. B.C. Punmia | |