**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

**13CE4101 -ENVIRONMENTAL ENGINEERING – II**

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

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| --- | --- | --- |
| **Course Outcomes** | CO1 | Be able to estimate sewage and design the sewage system. |
| CO2 | (a) Be able to determine the characteristics of domestic wastewater.  (b) Be able to design preliminary sewage treatment plant. |
| CO3 | Be able to design secondary sewage treatment plant. |
| CO4 | Understand the concepts of sludge management and tertiary sewage treatment. |
| CO5 | Understand the methods of effluent disposal. |
| **Course Content** | **UNIT – I**  **WASTEWATER COLLECTION AND ESTIMATION:** Sanitation**-**Systems of sanitation Sewerage-Systems of sewerage-Sources of wastewater-Sewage and storm water estimation Hydraulic design of sewers-Different materials used for sewers-Shapes of sewer-Sewer appurtenances-House drainage & Plumbing systems  **UNIT – II**  **CHARACTERISTICS OF DOMESTIC WASTEWATER:** Characteristics of sewage-physical, chemical, biological-BOD equation-Factors affecting the BOD rate of reaction Population equivalent-Relative stability  **PRELIMINARY AND PRIMARY SEWAGE TREATMENT:** Layout and generaloutline of wastewater treatment plant-Function of each unit-Principles and design of screens-Grit chambers-Primary settling tanks  **UNIT – III**  **SECONDARY SEWAGE TREATMENT:** Principles and nutritional requirement of biological treatment system-Factors affecting biological treatment-Working principles and constructional details of Trickling filter-Activated sludge process-Oxidation/Stabilization pond-Oxidation ditch  **UNIT – IV**  **SLUDGE MANAGEMENT:** Sludge-Characteristics and types-Sludge treatment-Thickening Stabilization-Conditioning-Dewatering-Drying/Incineration-Sludge utilization and disposal  **Tertiary SEWAGE treatment:** Removal of nitrogen-Phosphorus-Refractory organic-Heavy metals-Suspended solids and pathogenic bacteria.  **UNIT – V**  **EFFLUENT DISPOSAL:** Methods-Dilution-Self purification of surface water bodies-Oxygen sag curve-Marine disposal-Land disposal-Sewage farming  Onland disposal and treatment systems-Working principle and design of septic tank- Septic tank effluent disposal system-Disposal standards | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Sewage Disposal and Air Pollution Engineering by S.K. Garg. 2. Wastewater Engineering by B.C.Punmia.   **REFERENCE BOOKS:**   1. Water Supply and Sanitary Engineering by G. S. Birdie & J. S. Birdie. 2. Environmental Engineering by H.S. Peavy et al. 3. Wastewater Engineering, Treatment, Disposal and Reuse by Metcalf and Eddy. | |