**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. | CourseCode | Course Title | ContactHours/Week | Credits | Evaluation |
| SessionalTest-I | SessionalTest-II | Total Sessional Marks (Max. 40) | SemesterEnd Examination | Max.Total Marks |
| **THEORY** | L | P | T |  | Durationin Hours | Max.Marks | Durationin Hours | Max.Marks | 0.8(Better of two sessional tests)+0.2(Other) | Durationin 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

**13CE3205 - ENVIRONMENTAL ENGINEERING – I**

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| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | **Fluid mechanics – I** | **Sessional Evaluation :****Univ.Exam Evaluation:****Total Marks:** | 4060100 |

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| **Course Outcomes** | CO1 | Identify the sources of water and intake works for collection. Be able to forecast and calculate water demand. |
| CO2 | Be able to determine the water quality and understand the conventional methods of water treatment. |
| CO3 | Understand the concepts of filtration and disinfection. |
| CO4 | Apply the advanced water treatment methods. |
| CO5 | Understand the various methods of conveyance and distribution of water. Be able to design pipe-networks by hardy-cross method. Understand various joints, valves and house service connections. |
| **Course Content** | **UNIT – I****SOURCES, DEMAND AND COLLECTION OF WATER:** Sources of water-Source selection Water demand-Types-Factors affecting water demand-Fluctuations in water demand-Design period-Population forecasting methods and their suitability-Intake works for collection of water.**UNIT – II****WATER QUALITY:** Need for protected water supply-Water quality- Characterization-Water quality standards-Water-borne diseases**CONVENTIONAL TREATMENT OF WATER:** General outline of conventional water treatment units and their functions-Theory of aeration-Aeration methods-Principles and design of sedimentation-coagulation, flocculation and clarification**UNIT – III****FILTRATION AND DISINFECTION:** Theory of filtration-Types of filters- Working and design of slow and rapid sand filters-Operational troubles in filters-Disinfection-Types of disinfectants-Theory of chlorination-Break point chlorination.**UNIT – IV****ADVANCED TREATMENT METHODS:** Membrane process- Removal of salinity-Adsorption technique-Removal of arsenic-Ion exchange process-Removal of hardness-Chemical oxidation and precipitation-Removal of Iron &, manganese, fluorides.**UNIT – V****CONVEYANCE SYSTEM:** Intake structures-Systems of conveyance of water-Pipe materials Hydraulics of flow in pipes**WATER DISTRIBUTION:** Requirements of water distribution-Components-Service reservoirs Layout of distribution networks-Design of pipe networks-Hardy cross and equivalent pipe method-Pipe joints-Valves-House service connections. |
| **Text Books and reference Books:** | **TEXT BOOKS:**1. Water Supply Engineering by S.K. Garg.
2. Water Supply Engineering by B.C.Punmia.

**REFERENCE BOOKS:**1. Water Treatment Principles and Design by James M. Montgomery.
2. Water and waste water Technology by E.W. Steel.
3. Environmental Engineering by H.S. Peavy et al.,
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