**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 – I SEMESTER**

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| --- | --- | --- | --- | --- | --- |
| 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 | 13CE3101 | Structural Analysis - I | 3 | - | 1 | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
| 2 | 13CE3102 | R.C.C. Structural Design – I | 3 | - | 1 | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
| 3 | 13CE3103 | Steel Structural Design | 3 | - | 1 | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
| 4 | 13CE3104 | Foundation Engineering | 3 | - | 1 | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
| 5 | 13CE3105 | Transportation Engineering - II | 4 | - | - | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
| 6 | 13CE3106 | Advanced Hydraulics | 4 | - | - | 4 | 2 | 40 | 2 | 40 | 3 | 60 | 100 |
|  | **PRACTICALS** |  |  |  |  |
| 1 | 13CE31P1 | Soil Mechanics Laboratory | - | 3 |  | 2 | - | - | - | - | Day-to-day Evaluation and a test | 3 | 60 | 100 |
| 2 | 13CE31P2 | Material Testing Laboratory | - | 3 |  | 2 | - | - | - | - | 3 | 60 | 100 |
|  |  | **TOTAL** | **20** | **06** | **04** | **28** |  |  |  |  |  |  | **800** |

**13CE3106 – ADVANCED HYDRAULICS**

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

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| **Course Outcomes** | CO1 | Be able to analyze the flow characteristics in channels. |
| CO2 | Be able to design channels for uniform flow. |
| CO3 | Be able to compute specific energy and critical depth. |
| CO4 | Be able to analyze GVF and make GVF computations. |
| CO5 | Be able to analyze RVF and make RVF computations. |
| **Course Content** | **UNIT – I****INTRODUCTION TO CHANNEL FLOW :** Differences between pipe flow and channel flow – classification of flows – Geometric elements of channel section – velocity and pressure distributions – Velocity distribution coefficients – Parallel and curvilinear flows – Pressure correction coefficient. **UNIT – II****UNIFORM FLOW:** Uniform flow – Chezy and Manning formulate – Hydraulically efficient channel sections (rectangular, triangular, trapezoidal and circular sections) – Uniform flow computations.**UNIT – III****SPECIFIC ENERGY AND CRITICAL DEPTH:** Specific energy and critical depth – Critical flow computations – Applications – Transitions.**UNIT – IV****GRADUALLY VARIED FLOW :** Dynamic equation of gradually varied flow – classification of flow profiles – Features of flow profiles – Control sections – Analysis of flow profiles – Gradually varied flow computations – Direct step method.**UNIT – V****RAPIDLY VARIED FLOW:** Hydraulic jump – Momentum equation – Characteristics of jump in a horizontal rectangular channel – Rapidly varied unsteady flow – Surges in rectangular channels. |
| **Text Books and reference Books:** | **TEXT BOOKS:**1. Open Channel Hydraulics by Ven Te Chow.
2. Flow in Open Channels by Subramanya K.

**3.** Open channel flow by Madan Mohan Das.**REFERENCE BOOKS:**1. Flow through Open Channels by K.G.Rangaraju.
2. Hydrology by H.M. Raghunath.
3. Hand Book of Applied hydrology by Ven Te Chow
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