**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** |

**13CE3104 - FOUNDATION ENGINEERING**

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

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| **Course Outcomes** | CO1 | Be able to analyse finite and infinite slopes |
| CO2 | Be able to calculate earth pressure in various soils under different types of loadings and able to analyse stability of retaining walls. |
| CO3 | Be able to calculate bearing capacity of shallow foundations |
| CO4 | Be able to design pile foundation and able to understand the deign characteristics of well foundation |
| CO5 | Understand the various methods of site exploration and be able to write investigation reports. |
| **Course Content** | **UNIT – I****STABILITY OF SLOPES:** Stability analysis of infinite slopes – Stability analysis of finite slopes – Swedish circle method – Friction circle method – Tailor’s stability number and use of charts – Improving stability of slopes.**UNIT – II****EARTH PRESSURES:** Earth pressure theories of lateral earth pressure – Active and passive earth pressures in cohesionless and cohesive soils (with and without surcharge) – Rankine’s and Coulumb’s earth pressure theories – Graphical methods due to Rebhann and Culmann.**EARTH RETAINING STRUCTURES:** Types of Retaining Structures – Stability Consideration of Gravity and Cantilever Retaining Walls – Drainage in retaining walls – Joints in retaining walls.**UNIT – III****BEARING CAPACITY OF SHALLOW FOUNDATIONS :** Types of foundations – Depth of foundation – Terzaghi’s bearing capacity equation – Bearing capacity of square, circular, rectangular and continuous footings – Meyerhof’s theory – Skempton’s method – Brinch Hansen’s method – Effect of ground water table on bearing capacity – Bearing capacity from building codes – Tolerable settlements – Settlement analysis. **UNIT – IV****PILE FOUNDATIONS:** Classification of piles – Pile driving – Load carrying capacity of piles – Dynamic formulae – Static formulae – pile load tests – Insitu penetration Tests – Group action of piles – Negative skin friction.**WELL FOUNDATIONS:** Types – Different shapes of wells – Components of wells – functions and Design Criteria – Sinking of wells – Tilts and shifts.**UNIT – V****SITE INVESTIGATIONS AND SUB-SOIL EXPLORATION:** Site reconnaissance – Depth of exploration – Lateral extent of exploration – Test pits – Auger borings – Wash borings – Soil sampling – Split – spoon sampler – Penetration tests – Geophysical methods – Seismic refraction and electrical resistivity methods – Sub soil investigation reports. |
| **Text Books and reference Books:** | **TEXT BOOKS:**1. Soil Mechanics and Foundation Engineering by K.R.Arora.
2. Geotechnical Engineering by C. Venkatramaiah.
3. Soil Mechanics and foundation Engineering by P.N. Modi
4. Soil Mechanics & Foundation Engineeering by B.C.Punmia

**REFERENCE BOOKS:**1. Analysis and design of foundations and retaining structures by Shamsher Prakash, Gopal Ranjan & Swamisaran.
2. Soil Mechanics & Foundation Engg. by V.N.S.Murthy.
3. Foundation Engineering by Teng
4. Foundation Engineeing by P.C Varghese.
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