**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)

**II YEAR OF FOUR YEAR B.TECH. DEGREE COURSE – II SEMESTER**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| S.  No. | | Course  Code | Course Title | Contact Hours/  Week | | | Cred-its | 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 | | 13CE2201 | Strength of materials | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 2 | | 13CE2202 | Fluid Mechanics - II | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 3 | | 13CE2203 | Soil Mechanics | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 4 | | 13CE2204 | Transportation Engineering - I | 4 | - | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 5 | | 13CE2205 | Building Planning & Drawing | 1 | 3 | - | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
| 6 | | 13CE2206 | Surveying - II | 3 | - | 1 | 4 | 2 | 40 | 2 | | 40 | 3 | 60 | 100 | |
|  | | | **PRACTICALS** |  |  | | | | | | | |  |  | | | |
| 1 | 13CE22P1 | | Surveying Laboratory - II | - | 3 | - | 2 | - | - | | - | - | Day-to-day Evaluation and a test | 3 | 60 | | 100 |
| 2 | 13CE22P2 | | Fluid Mechanics & Hydraulic Machinery Laboratory | - | 3 | - | 2 | - | - | | - | - | 3 | 60 | | 100 |
|  |  | | **TOTAL** | **17** | **09** | **04** | **28** |  |  | |  |  |  |  | | **800** |

**Note:-** *Survey camp for a duration of 10 days to be conducted before the last day of instruction for II B.Tech, II – Sem. This shall be evaluated as part of Survey Laboratory –II.*

**13CE2206 - SURVEYING – II**

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| --- | --- | --- | --- |
| **Course category:** | Program core | **Credits:** | 4 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3 - 1 - 0 |
| **Prerequisite:** | Engineering Mathematics-I & II (I-year), Surveying-I (II-I) | **Sessional Evaluation :**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course Outcomes** | CO1 | Use a theodolite for measurements in traverse and able to make all computations in traverse |
| CO2 | Be able to calculate elevation and distances using theodolite. |
| CO3 | Be able to set various types of curves in field. |
| CO4 | Be able to use a total station in surveying and understand the basics of GPS. |
| CO5 | Be able to apply the principles of photogrammetry in surveying. |
| **Course Content** | **UNIT – I**  **THEODOLITE SURVEYING:** Theodolite-Parts-Definitions-Fundamental Axes-Measurement of Horizontal Angles by Repetition And Reiteration Methods-Measurement of Vertical angles, direct angles and deflection angles-Prolonging a straight line- Traverse survey – Checks in traverse – Errors in theodolite traversing – Traverse Computations – Coordinate systems – Omitted measurements..  **UNIT – II**  **TACHEOMETRY:** Principle of stadia method – Tacheometric constants and their determination – Determination of distances and elevations of points by stadia and tangential methods – Tacheometric survey – Errors in stadia surveying.  **UNIT – III**  **CURVES:** Principles of simple and compound curves – Curve ranging – Offsets from long chord – Rankine’s method one theodolite method–Two theodolite method – Reverse curve between parallel straights – Super elevation – Uses and characteristics of transition curve – Length of transition curve – Principles of compound curve – Types and elements of Vertical curves.  **UNIT – IV**  **AERIAL SURVEY:** Introduction – Types of Photographs – Vertical Aerial Photographs – Geometry – Scale – Ground coordinates from a vertical photograph –Photomaps and mosaics.  **REMOTE SENSING:** Definition – History – Physics of Remote Sensing – Electromagnetic Radiation – Interaction of Electromagnetic Radiation with Atmosphere, Earth Surface Features – Vegetation, Soils, Water  **UNIT – V**  **TOTAL STATION INSTRUMENT:** Introduction – Functions – performed – Parts – Handling and setting up a Total Station Instrument – Measuring horizontal angles – Deflection angles – Azimuths, Vertical or Zenith angles – Sights and Marks – Adjustments of Total Station Instruments and their accessories – Sources of Error in Total Station work.  **GLOBAL POSITIONING SYSTEM:** Introduction – Overview of GPS – Reference Coordinate Systems for GPS – Fundamentals of GPS Positioning – Differential GPS.  **GEOGRAPHICAL INFORMATION SYSTEM:** Basic Principles – Definition – Components – Data Structures – Functioning of GIS - Data Input –Data Base Management Systems. | |
| **Text Books and reference Books:** | **TEXT BOOKS:**   1. Surveying and levelling Vol. II&III by B.C Punmia. 2. Surveying and Levelling Parts 1 & 2 by T.P. Kanetkar and S.V.Kulkarni.   **REFERENCE BOOKS:**   1. Elements of Photogrammetry by P.R.Wolf. 2. Plane Surveying by A.M. Chandra.   Elements of Geomatics by P.R.Wolf. | |