**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 – I SEMESTER**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | 13SH2102 | Computational Techniques, Statistics and Complex Analysis | 3 | - | 1 | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
| 2 | 13CE2101 | Engineering Mechanics | 3 | - | 1 | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
| 3 | 13CE2102 | Fluid Mechanics - I | 3 | - | 1 | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
| 4 | 13CE2103 | Building Technology | 4 | - | - | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
| 5 | 13CE2104 | Surveying – 1 | 3 | - | 1 | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
| 6 | 13CE2105 | Engineering Geology | 4 | - | - | | 4 | | 2 | | 40 | | 2 | | 40 | | 3 | 60 | | 100 | |
|  | | **PRaCTICALS** |  |  | | | | | | | | | | | | |  |  | | | | |
| 7 | 13CE21P1 | Surveying Laboratory – I | - | 3 | | - | | 2 | | - | | - | | - | | - | Day-to-day Evaluation and a test | 3 | | 60 | | 100 |
| 8 | 13CE21P2 | Engineering Geology Laboratory | - | 3 | | - | | 2 | | - | | - | | - | | - | 3 | | 60 | | 100 |
|  |  | **TOTAL** | **20** | **06** | | **04** | | **28** | | **-** | | **-** | | **-** | | **-** | **-** | | **-** | | **800** |

**13CE2201 – SURVEYING I**

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

|  |  |  |
| --- | --- | --- |
| **Course Outcomes** | CO1 | Understand basic principles of land surveying. Be able to apply chain surveying principles to book observations and make necessary calculations. |
| CO2 | Understand various methods of angle measurement. Be able calculate bearings, magnetic dip and declination. Be able to plot survey using a prismatic compass. Be able to calculate errors in compass survey. |
| CO3 | Understand the fundamentals of plane table surveying. Apply various methods of plane tabling and be able plot plane table survey with correction for errors. |
| CO4 | Understand fundamental principles and techniques of leveling and different types of level instruments. Use leveling principles to draw profiles, longitudinal sections, cross-sections and contours. |
| CO5 | Be able to calculate areas and volumes form survey data using mathematical principles. |
| **Course Content** | **UNIT – I**  **BASIC CONCEPTS:** Surveying Definition – Classification – Principles of Surveying – Measurements – Basic Measurements and methods – Plan and map – Scales used for Maps and Plans.  **CHAIN SURVEYING**: Principles of Chain Surveying – Basic Definitions – Well Conditioned Triangle; Selection of Survey Stations and Survey Lines – Field work – Recording Measurements – Types Cross – Staff – Instruments for setting out right angles – line ranger CrossStaff Survey – Obstacles in Chain Survey .  **UNIT – II**  **COMPASS SURVEYING**: Traversing – Meridians – Azimuth – Bearings – Magnetic Dip and Declination – Prismatic compass – Compass Traverse – Local attraction – Plotting of a survey work; Errors in Compass Surveying – Limits of accuracy.  **UNIT – III**  **PLANE TABLE SURVEYING**: Plane table and its accessories – setting up – Plane tabling – radiation – traversing – intersection and resection methods – Resection by trial and error method – Graphical method – Tracing paper method – Lehmann rules – Errors in plane tabling.  **UNIT-IV**  **LEVELLING:** Basic definitions – Curvature and Refraction – Different methods of leveling – Classification of direct leveling methods – Levels – Dumpy level – Tilting level – Auto level – Levelling staff – Level field book – Profile leveling – Cross sectioning – Reciprocal leveling – Sources of errors in leveling – Degree of Precision.  **CONTOURING**: Methods of representing relief – contouring – contour interval – Characteristics of contours – Methods of locating contours – Direct and indirect methods of contouring – Interpolation and sketching of contours – Location of a contour gradient – Uses of contour maps.  **UNIT – V**  **AREAS AND VOLUMES:** Computation of areas from field notes and plotted figures.areas of figures at boundaries by Midordinate rule – Trapezoidal rule – Average ordinate rule – Simpson’s 1/3 rd rule.  Computation of straight volumes of Level Section using Trapezoidal and Prismoidal rules. Computation of volumes of Borrow Pits by Spot Levels and Reservoirs by contours. | |
| **Text Books and reference Books:** | **TEXTBOOKS:**   1. Surveying by Dr. K. R. Arora. 2. Surveying by Dr. B. C. Punmia. 3. Surveying by Dr. C. Venkatramaiah.   **REFERENCE BOOKS:**   1. Surveying and Levelling by S.S.Bhavikatti. 2. Surveying and Levelling by T.P.Kanetkar and S.V.Kulkarni. 3. Plane Surveying by AM Chandra | |