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| Course Number and Name | | | | | | | | | | | | |
| BCE302 - SURVEYING – I | | | | | | | | | | | | |
| Credits and Contact Hours | | | | | | | | | | | | |
| 3 & 45 | | | | | | | | | | | | |
| Course Coordinator's Name | | | | | | | | | | | | |
| Ms.A.Ambica | | | | | | | | | | | | |
| Text Books and References | | | | | | | | | | | | |
| TEXT BOOKS: | | | | | | | | | | | | |
| 1. Punmia B.C."Surveying" Vols I and II & III Laxmi Publications, 1999. | | | | | | | | | | | | |
| REFERENCE: | | | | | | | | | | | | |
| 1. Kanekar T.P."Surveying and Levelling" VOls. I and II, united book corporation, Pune, 1994. | | | | | | | | | | | | |
| 2. Chandra A.M, "Plane Surveying and Higher Surveying", New Age International (P | | | | | | | | | | | | |
| 3. Limited, Publishers, Chennai, 2002. | | | | | | | | | | | | |
| 4. Heribert Kahmen and wolfgang Faig "surveying" Walter de Gruyter, 1995 | | | | | | | | | | | | |
| 5. Bannister A and Raymonds. "Surveying" ELBS. Sixth Edition, 1992. | | | | | | | | | | | | |
| Course Description | | | | | | | | | | | | |
| <ul style="list-style-type: none"> To introduce the principles of various surveying methods and applications to Civil Engineering projects. | | | | | | | | | | | | |
| Prerequisites | | | | | | Co-requisites | | | | | | |
| Basic Mechanical Engineering | | | | | | NIL | | | | | | |
| required, elective, or selected elective (as per Table 5-1) | | | | | | | | | | | | |
| Course Outcomes (COs) | | | | | | | | | | | | |
| CO1 | Carry out preliminary surveying in the field of civil engineering applications | | | | | | | | | | | |
| CO2 | Plan a survey, taking accurate measurements, field booking, plotting and adjustment of traverse using various conventional instruments | | | | | | | | | | | |
| CO3 | Plan a survey for applications such as road alignment and height of building. | | | | | | | | | | | |
| CO4 | Take horizontal and vertical angles precisely by an optical distance measurement using theodolite. | | | | | | | | | | | |
| CO5 | Set out curves, buildings, culverts and tunnels | | | | | | | | | | | |
| Student Outcomes (SOs) from Criterion 3 covered by this Course | | | | | | | | | | | | |
| COs/SOs | a | b | c | d | e | f | g | h | i | j | k | |
| CO1 | H | M | | M | H | | | | | | | |
| CO2 | | H | | | M | | | | | | | |
| CO3 | H | | | | H | | | | | | | |
| CO4 | H | | | M | | | | | | | | |
| CO5 | | | | | M | | | | | | | |

| List of Topics Covered | | |
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| UNIT I | INTRODUCTION AND CHAIN SURVEYING | 9 |
| <p>Definition – Principles – classification-field & office work-scales-conventional signs – survey instruments – care & adjustment – ranging & chaining – Reciprocal Ranging – setting perpendiculars – well-conditioned triangles – traversing – plotting – enlarging & reducing figures.</p> | | |
| UNIT II | COMPASS & PLANE TABLE SURVEYING | 9 |
| <p>Prismatic compass – Surveyors compass - bearing systems & conversions- local attraction- magnetic declination – Dip – Traversing – Plotting – adjustment – Plane table Surveying - Methods of Radiation – intersection, Resection – traversing – Adjustments- Errors in plane tabling.</p> | | |
| UNIT III | LEVELING APPLICATION | 9 |
| <p>Level line-Horizontal line-levels & Staves – spirit level – sensitiveness-bench marks – temporary and permanent adjustments– fly & check leveling – Booking – reduction – Curvature and refraction reciprocal leveling – longitudinal and cross sectioning – plotting – calculation of areas and volumes – contouring – methods – characteristics – and uses of contours – plotting-earth work volume – capacity of reservoirs.</p> | | |
| UNIT IV | THEODOLITE SURVEYS | 9 |
| <p>Theodolite- vernier and microptic-description and uses – temporary and permanent adjustments of vernier transit – Horizontal angles – vertical angles – closing error and distribution – Gale’s table- Omitted measurement</p> | | |
| UNIT V | ENGINEERING SURVEYS | 9 |
| <p>Reconnaissance-preliminary and location surveys for Engineering Projects – Layout – Setting out work-Route surveys for highways, railways and water ways – curve ranging – Horizontal and vertical curves – Simple Curves – setting with chain and tapes, tangential angles by theodolite, double theodolite-compound and reverse curves - Transition curves-functions and requirements-sight distances- mine surveying- instruments – tunnels correlation of underground and surface surveys .</p> | | |