**17CE22P1 - SURVEYING LABORATORY - II**

**(Civil Engineering)**

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| **Course Category** | Professional Core | **Credits:** | 2 |
| **Course Type**  | Theory | **Lecture - Tutorial - Practical**  | 0-0-3 |
| **Prerequisite** | Surveying and Surveying Laboratory | **Sessional Evaluation**  | 40 |
| **Semester End Exam Evaluation**  | 60 |
| **Total Marks**  | 100 |

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| **Course Objectives** | To understand and demonstrate the use of theodolite and total station for various survey measurements. |
| **Course Outcomes** | CO1 | Use the theodolite along with chain/tape on the field. |
| CO2 | Apply geometric and trigonometric principles of basic surveying calculations. |
| CO3 | Setup simple circular curves using linear and angular methods. |
| CO4 | Use the Total station instrument in basic engineering works. |
| CO5 | Plan a survey, taking accurate measurements, field booking, plotting and adjustment of errors. |
| CO6 | Apply field procedures in basic types of surveys, as part of a surveying team. |
| **Course Content** | **EXERCISE-1:**Measurement of horizontal angles by repetition and reiteration methods; Measurement of vertical angles.**EXERCISE-2:**1. To determine the elevation of an object when the object and the instrument are in the same plane.
2. To determine the elevation of an object when the object and instruments are in different planes.

**EXERCISE-3:**To determine the tacheometric constants.**EXERCISE-4:**To determine the distance and gradient between two inaccessible points using stadia tacheometry and tangential tacheometry.**EXERCISE-5:**To set out simple curve using linear methods – Perpendicular offsets from long chord.**EXERCISE-6:**To set out simple curve using Rankine’s deflection angles method (One Theodolite method only).**EXERCISE-7:**Introduction to Advanced surveying instruments like Total station, hand held G.P.S, optical theodolite and electronic theodolite.**EXERCISE-8:**1. Measurement of distance & direction using Total Station.
2. Measurement of area of given field using total station.

**EXERCISE-9:**1. Data collection using total station by at least two change points.
2. Setting out works using total station.
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