

<b>Subject Code:</b> 1ET1060303	<b>Subject Title:</b> SURVEYING
<b>Pre-requisite Subject</b>	<b>Student shall have basics of Civil Engineering</b>

**Course Objective:**

1. To develop concepts of various types of land surveying and prepare and interpret maps and drawing.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Theory (T+P)
Lecture	Tutorial	Practical	Credit	Theory		Practical		
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	0	2	4	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
01	<b>Plane Table Survey:</b> Introduction, principle, instruments, setting up the plane table, methods of plane tabling, advantages, sources of Errors.	10	20
02	<b>Theodolite Traversing:</b> Introduction, definitions, the vernier transit theodolite, temporary and permanent adjustment of theodolite, measuring horizontal and vertical angles, methods of traversing, closing error, computation of latitudes and departure, check in closed and open traverse, balancing of traverse, Gale's table, traverse area, omitted measurements.	10	20
03	<b>Trigonometric leveling:</b> Indirect leveling, leveling on steep ground- methods.	6	15
04	<b>Curves:</b> Introduction, theory and setting out methods of simple circular curve, elements of a compound and reverse curves, transition curve, types of transition curve, combined curve, types of vertical curves.	6	15
05	<b>Computation of Areas:</b> Methods to compute area of traverse- Determining areas from Plans, Trapezoidal rule- Simpson's rule, Use of planimeter Computation of Volumes- Volume from cross sections, Trapezoidal and Prismoidal formulae, Prismoidal correction, Curvature correction, Determination of capacity of reservoir and volume from borrow pits.	6	20
06	<b>Hydrography:</b> Introduction, purposes, control points, soundings, instruments & methods of locating soundings.	2	5
07	<b>Setting out Works:</b> Building, Culvert, Bridge, Tunnel	2	5

**Course Outcome:**

1. Conduct plane table and theodolite traverse surveys at identified Site.
2. Conduct trigonometrically leveling
3. Set out simple circular and transition curves at given location
4. Compute areas and volumes using standard rules and equipment's such as planimeter
5. Conduct hydrographical survey
6. Give layout of foundations for buildings, culverts, bridges and tunnels as per plan/drawing.

**List of References:**

1. Surveying Vol. I, II and III by Dr. B.C. Punamia
2. Surveying Vol. I, II and III by Dr. K.R. Arora
3. Surveying Vol. I and II by S. K. Duggal
4. Surveying and Leveling by N.N. Basak
5. Surveying and Leveling by R. Agor
6. Advanced Surveying by R. Agor.
7. Roy, S.K., Fundamentals of Surveying, Prentice Hall India, New Delhi
8. Subramanian, R., Surveying and Leveling, Oxford University Press, New Delhi
9. Surveying by Dr. R. B. Khasiya
10. Surveying by Dr. R. P. Rethaliya

**List of Practicals:**

1. Plane table traversing by intersection, radiation, two point problem and three point problem methods
2. Theodolite traversing and plotting of traverse by applying corrections in Gale's traverse table
3. Setting out simple circular curve by different methods
4. Setting out combined curve (Transition - Circular – Transition)
5. Setting out building foundations
6. Computation of area of submergence and storage volume from contour maps for reservoir projects.

**Project:**

Term work shall be based on the following field projects conducted by students:

- 1) Plane table survey project.
- 2) Theodolite traverse survey project.
- 3) Setting out of curve.