

B.E.Semester : III

Civil Engineering

Subject Name: SURVEYING (CV306)

A. Course Objective:

The main objectives of the course are

- Every civil engineering activity takes place on the surface of earth and starts with availing and measuring the land, with the subject surveying students will pursue the engineering approach about surveying.
- The subject involves surveying activities of taking various measurements on ground that promote habit of working in groups, neatness and care in documentation.

B. Teaching /Examination Scheme

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract/ Tut.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	02	05	04	03	70	30	20	30	150

C. Detailed Syllabus

1.Theodolite Traversing:

Introduction to vernier transit theodolite, , definitions, 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, co-ordinate method, omitted measurements.

2. Plane Table Survey:

Introduction, principle, instruments, Advantages & limitation, Accessories of plane tabling, setting up the plane table, methods of plane tabling, advantages, sources of Errors.

3. Curves:

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.

4. Computation of Areas:

Areas from field measurement and plans, different methods, Trapezoidal and Simpson’s rule, Planimeter, Volume by trapezoidal and prismoidal formula, calculation of earthwork in cutting and embankment for civil engineering works, volume by spot levels, capacity of reservoir.

5. Hydrographic Survey:

Introduction, purposes, control points, soundings, instruments & methods of locating soundings.

6. Setting out Works:

Building, Culvert, Bridge, Tunnel

7. Projection and Coordinate system in GIS

Map Scale, Coordinate systems, spatial reference, map projections, and geographic transformations.

D. Lesson Planning

Sr. No.	Title of the Unit	Minimum Hours	Weightage
1.	Theodolite Traversing	11	25%
2.	Plane Table Survey	04	8%
3.	Curves	10	23%
4.	Computation of Areas	09	20%
5.	Hydrography	04	8%
6.	Setting out Works	04	8%
7.	Projection and Coordinate system in GIS	03	8%

LIST OF EXPERIMENTS:

Sr. No.	Name of Experiment
1.	Plane Table Survey
2.	Theodolite Survey
3.	Setting Out Simple Circular Curve
4.	Field Projects: (A) Theodolite Traversing (Gale's Traverse Survey) (B) Setting out Curve

E. Instructional method and pedagogy (Continuous Internal Assessment Scheme) (CIA)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries 05 Marks.
- At regular intervals assignments will be given. In all, a student should submit all assignments of 05 marks each.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries 05 Marks.
- Viva Voce will be conducted at the end of the semester of 05 Marks.
- One internal exam of 30 marks is conducted as a part of Mid semester evaluation.
- Experiments shall be performed in the laboratory related to course contents.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures.

F. Students Learning Outcomes:

- On the successful completion of this course the students will get a diverse knowledge of surveying practices applied for real life problems.

- The students will learn to work with various surveying equipments, like, Theodolite, Dumpy level, etc. in order to apply the theoretical knowledge to carry out practical field work.
- The knowledge of limits of accuracy will be obtained by making measurements with various surveying equipment employed in practice.

G. Recommended Study Materials

A. Text Books & Reference Books:

1. Basak, N.N., Surveying and Levelling, Tata Mcgraw Hill, New Delhi
2. Subramanian, R., Surveying & Levelling, Oxford University Press, New Delhi
3. Kanetkar, T.P. and Kulkarni, S.V., Surveying and Levelling Vol. I & II, Pune Vidhyarthi Gruh
4. Arora, K.R., Surveying Vol. I, II & III, Standard Book House. New Delhi
5. Agor, R., Surveying and Levelling, Khanna Publishers, New Delhi
6. Agor, R., Advanced Surveying, Khanna Publishers, New Delhi
7. Punamia, B.C., Surveying Vol. I, II & III, Laxmi Publications
8. Surveying and Levelling Vol. I and II by T.P Kanetkar and S.V Kulkarni
9. Advanced Surveying by R. Agor.
10. Roy, S.K., Fundamentals of Surveying, Prentice Hall India, New Delhi
11. Lo, C.P. & Yeung A.K.W., Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi, 2002.
12. Anji Reddy, M., Remote Sensing and Geographical Information Systems, B.S.Publications, Hyderabad, 2001.

B. Web Materials:

1. <http://nptel.iitm.ac.in/courses/Webcourse-contents/IITROORKEE/>
2. SURVEYING/home.htm
3. <http://nptel.iitm.ac.in/video.php?subjectId=105104101>
4. <http://nptel.iitm.ac.in/courses.php?branch=Civil>