

25CVSE208:Field Survey Techniques-I

w. e. f. Academic Year:	2026-27
Semester:	3rd
Category of the Course:	Core Course
Prerequisite:	Zeal to learn the subject
Rationale:	Field surveys are essential for gathering first-hand, empirical data to study a problem in depth and meet specific research objectives. Surveys help verify and supplement information from existing sources, such as maps or historical data. Field research can reveal unexpected information or social facts that would not be apparent in controlled settings or through other methods.

Course Outcomes:

After completion of the course, students will be able to:

	Course Outcome (CO)	RBT Level (Cognitive Domain)	Marks % Weightage
CO1	Define research objectives, identify case studies, select appropriate survey techniques, and consider ethical implications for fieldwork.	Understand	14
CO2	Use a variety of survey instruments and tools includes both conventional and modern equipment, such as a Dumpy Level, Theodolite.	Apply	20
CO3	Able to apply field techniques—including observations (participant and non-participant), interviews, and questionnaires—to collect both qualitative and quantitative data. They can then organize and analyze this information.	Analyze	15
CO4	Create various maps and reports like preparing Contour Maps based on field data, able to structure and write a comprehensive technical report detailing their field survey and findings.	Analyze	25
CO5	Analyze survey data and perform necessary calculations, error adjustments, and plotting for preparation of maps and plans.	Analyze	26

Teaching and Evaluation Scheme:

Teaching Scheme					Examination Scheme				
L	T	P	C	Hours/Week	IE	Theory	CIA	Practical	Total Marks
0	0	4	2	4	00	00	30	20	50

IE: Internal Evaluation

CIA: Continuous Internal Assessment

Theory: Theory Exam (End Semester)

Practical: Practical Exam (End Semester)

List of Practical:

	Hrs.
Plane table traversing by Intersection and Radiation Methods.	15
Detail Practical of Dumpy Level.	15
Detail Practical of Theodolite Traversing	15
Plotting of Traverse by Applying Corrections in Gale's Traverse Table & Field Level Tacheometric Survey Project.	15
	60

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks in Percentage					
Remember	Understand	Apply	Analyze	Evaluate	Create
5	14	10	56	10	5

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1 : **R. Agor.**, "Surveying and Levelling", Khanna Publishers, New Delhi.
- 2 : **T.P. Kanetkar and S.V Kulkarni.**, "Surveying and Levelling, Volume –I & II", Pune Vidyarthi Griha Prakashan, Pune.
- 3 : **S. K. Duggal.**, "Surveying Vol. I and II", Tata Mcgraw Hill, New Delhi.
- 4 : **B.C. Punmia.**, "Surveying, Volume-I, II & II", Laxmi Publications, New Delhi.
- 5 : **Dr. K.R. Arora.**, "Surveying -Volume I, II & III", Standard Book House, New Delhi.
- 6 : **N. N. Basak.**, "Surveying and leveling", Tata Mcgraw Hill, New Delhi.
- 7 : **R. Subramanian.**, "Surveying and Levelling", Oxford University Press, New Delhi.

Teaching Learning Method

- Chalk and Board with visual aids (Microstructure charts).
- Demonstration of samples in the Metallurgy Laboratory.
- Industrial visits to heat treatment shops.
- Online NPTEL/SWAYAM video lectures on Phase Diagrams.

Course Outcomes Mapping:

CO No.	Course Outcome (CO)	POs/PSOs Mapped	Cognitive Level (RBT)	Knowledge Category	Lab Sessions (Hrs.)
CO1	Define research objectives, identify case studies, select appropriate survey techniques,	PO1, PO3 PO4, PO5, PO6, PO7 PO8, PO9,	Understand	Conceptual, Procedural	05

	and consider ethical implications for fieldwork.	PO10, PO12 PSO1.PSO2			
CO2	Use a variety of survey instruments and tools includes both conventional and modern equipment, such as a Dumpy Level, Theodolite.	PO1, PO2 PO4, PO5, PO6, PO8 PO9, PO10, PO12 PSO1.PSO2	Apply	Conceptual, Procedural	25
CO3	Able to apply field techniques—including observations (participant and non-participant), interviews, and questionnaires—to collect both qualitative and quantitative data. They can then organize and analyze this information.	PO1, PO2 PO3, PO4, PO5, PO6 PO7, PO8, PO10, PO12 PSO1.PSO2	Analyze	Conceptual, Procedural	10
CO4	Create various maps and reports like preparing Contour Maps based on field data, able to structure and write a comprehensive technical report detailing their field survey and findings.	PO1, PO2 PO3, PO4, PO5, PO6 PO7, PO8, PO10, PO12 PSO1.PSO2	Analyze	Conceptual, Procedural	10
CO5	Analyze survey data and perform necessary calculations, error adjustments, and plotting for preparation of maps and plans.	PO1, PO2, PO3, PO4, PO5, PO6, PO10,PO12 PSO1, PSO2	Analyze	Conceptual, Procedural	10

Mapping of COs with POs & PSOs:

CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	-	3	3	3	3	3	3	3	3	-	3	3	3
CO2	3	3	-	3	3	3	-	3	3	3	-	3	3	3
CO3	3	3	3	3	3	3	3	3	0	3	-	3	3	3
CO4	3	3	3	3	3	3	3	3	-	3	-	3	3	3
CO5	3	3	3	3	3	3	-	-	-	3	-	3	3	3

3: High, 2: Medium, 1: Low

Sustainable Development Goals (SDG) Integration

This course integrates sustainability by emphasizing accurate land surveying, efficient resource planning, responsible data collection, and preparation of maps for infrastructure development. It focuses on modern surveying tools, field investigations, and technical reporting that support sustainable land use and planned development. The course aligns with

SDG 4, SDG 9, SDG 11, and SDG 12.

CO	Course Outcome	Relevant SDGs	Justification
CO1	Define research objectives, identify case studies, select appropriate survey techniques, and consider ethical implications for fieldwork.	SDG 4, SDG 11	Develops knowledge and responsible practices for sustainable land and infrastructure surveys.
CO2	Use a variety of survey instruments and tools including conventional and modern equipment such as Dumpy Level and Theodolite.	SDG 4, SDG 9	Enhances technical skills and promotes use of engineering tools for infrastructure development.
CO3	Apply field techniques including observations, interviews, and questionnaires to collect, organize, and analyze qualitative and quantitative data.	SDG 4, SDG 11, SDG 12	Supports data-driven planning, efficient resource use, and sustainable community development.
CO4	Create various maps and reports such as contour maps and prepare comprehensive technical reports based on field survey findings.	SDG 9, SDG 11	Promotes planned infrastructure development through accurate mapping and documentation.
CO5	Analyze survey data and perform calculations, error adjustments, and plotting for preparation of maps and plans.	SDG 9, SDG 11, SDG 12	Encourages precise planning, efficient land utilization, and sustainable development practices.