SEMESTER S3

SURVEYING AND LEVELLING

Course Code	**PCAGL307**	**CIE Marks**	50
Teaching Hours/Week (L: T:P: R)	0:0:3:0	**ESE Marks**	50
Credits	2	**Exam Hours**	2 Hrs. 30 Min.
Prerequisites (if any)	None/ (Course code)	**Course Type**	Practical

Course objectives:

1. To introduce various land surveying equipments and methods
2. To impart concept and skills of various land surveying techniques
3. To impart concept and skills of levelling
4. To plot the result of surveying field works to form maps
5. To impart concept and skills of total station surveying

KTUSPECIAL

Details of Experiment

Expt. No	Experiment
1	Chain Survey I– Study of instruments used for chain survey chain, Ranging, Measurement of distance and area
2	Chain Survey II- Triangulation and Traversing
3	Cross – staff survey
4	Compass survey
5	Plane Table Survey I- Study of instruments, Radiation, Intersection, traversing

6	Plane Table Survey II- 2 Point problem and 3 Point problem
7	Levelling I– Study of instruments, Height of collimation method, Rise and fall method
8	Levelling II- Profile and Cross section
9	Levelling III- Contouring
10	Theodolite survey I – Study of the instrument, Measurement of horizontal angle – Repetition method
11	Theodolite survey II- Measurement of horizontal angle – Reiteration method
12	Theodolite survey III- Measurement of vertical angle
13	Tacheometric survey I- Study of instruments, Horizontal distance measurement
14	Tacheometric survey II- Measurement of height of the object, - Measurement of elevation difference between points and the gradient between them
15	Total station survey I
16	Total station survey II

KTU SPECIAL

Note: A minimum of 10 experiments are mandatory.

Course Assessment Method (CIE: 50 Marks, ESE 50 Marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Preparation/Pre-Lab Work, experiments, Viva and Timely completion of Lab Reports / Record. (Continuous Assessment)	Internal Exam	Total
5	**25**	**20**	**50**

End Semester Examination Marks (ESE):

Procedure/ Preparatory work/Design/ Algorithm	Conduct of experiment/ Execution of work/ troubleshooting/ Programming	Result with valid inference/ Quality of Output	Viva voce	Record	Total
10	15	10	10	5	50

Mandatory requirements for ESE:

- Submission of Record: Students shall be allowed for the end semester examination only upon submitting the duly certified record.
- Endorsement by External Examiner: The external examiner shall endorse the record.

KTU SPECIAL

Course Outcomes (COs)

At the end of the course the student will be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Use conventional surveying tools such as chain and compass for field surveying	**K1**
CO2	Apply levelling principles in field	**K3**
CO3	Understand the procedure for using plane table surveying	**K2**
CO4	Employ theodolite for field surveying	**K3**
CO5	Employ total station for field surveying	**K3**

K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create

CO-PO Mapping Table

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3							1	2			1
CO2	3			1				1	2			1
CO3	3			1				1	2			1
CO4	3			1	3			1	2			2
CO5	3				3			1				2

1: Slight (Low),2: Moderate (Medium),3: Substantial (High), : No Correlation

Text Books

Sl. No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
1	Surveying and Levelling.	Kanetkar T P.	Pune Vidyarthi Griha, Prakashan, Pune.	1993.
2	Surveying (Vol.I).	Punmia,B C	Laxmi Publications, New Delhi.	1987
3	Surveying and levelling	Rangwala	Charotar Publishing House Pvt. Ltd. Gujarat.	1991.
4	Surveying(Vol.I)	Arora K R	Standard Book House, Delhi.	1990

KTU SPECIAL

Continuous Assessment (25 Marks)

1. Preparation and Pre-Lab Work (7 Marks)

- Pre-Lab Assignments: Assessment of pre-lab assignments or quizzes that test understanding of the upcoming experiment.
- Understanding of Theory: Evaluation based on students' preparation and understanding of the theoretical background related to the experiments.

2. Conduct of Experiments (7 Marks)

- Procedure and Execution: Adherence to correct procedures, accurate execution of experiments, and following safety protocols.
- Skill Proficiency: Proficiency in handling equipment, accuracy in observations, and troubleshooting skills during the experiments.
- Teamwork: Collaboration and participation in group experiments.

3. Lab Reports and Record Keeping (6 Marks)

KTU SPECIAL

- Quality of Reports: Clarity, completeness and accuracy of lab reports. Proper documentation of experiments, data analysis and conclusions.
- Timely Submission: Adhering to deadlines for submitting lab reports/rough record and maintaining a well-organized fair record.

4. Viva Voce (5 Marks)

- Oral Examination: Ability to explain the experiment, results and underlying principles during a viva voce session.

Final Marks Averaging: The final marks for preparation, conduct of experiments, viva, and record are the average of all the specified experiments in the syllabus.

Evaluation Pattern for End Semester Examination (50 Marks)

1. **Procedure/Preliminary Work/Design/Algorithm (10 Marks)**

- Procedure Understanding and Description: Clarity in explaining the procedure and understanding each step involved.
- Preliminary Work and Planning: Thoroughness in planning and organizing materials/equipment.
- Algorithm Development: Correctness and efficiency of the algorithm related to the experiment.
- Creativity and logic in algorithm or experimental design.

2. **Conduct of Experiment/Execution of Work/Programming (15 Marks)**

- Setup and Execution: Proper setup and accurate execution of the experiment or programming task.

3. **Result with Valid Inference/Quality of Output (10 Marks)**

- Accuracy of Results: Precision and correctness of the obtained results.
- Analysis and Interpretation: Validity of inferences drawn from the experiment or quality of program output.

KTU SPECIAL

4. **Viva Voce (10 Marks)**

- Ability to explain the experiment, procedure results and answer related questions
- Proficiency in answering questions related to theoretical and practical aspects of the subject.

5. **Record (5 Marks)**

- Completeness, clarity, and accuracy of the lab record submitted