

Wks Mapped with the Course

WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
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Mark Distribution

Total Marks	CIE Marks	ESE Marks	ESE Duration
100	50	50	3 hrs

List of Experiments

Expt. No.	Experiments
1	Determination of aggregate toughness using the Aggregate Impact Value Test.
2	Determination of aggregate strength using Aggregate Crushing Value Test.
3	Determination of void ratio and bulk density of fine and coarse aggregates
4	Determination of standard consistency of cement.
5	Determination of 14 days and 28 days compressive strength of mortar cubes.
6	Determination of flexural behaviour of timber beam under three-point loading
7	Determination of 14 days and 28 days compressive strength of concrete cubes
8	Determination of ultimate shear strength of mild steel specimen by Double Shear test.
9	Determination of notch toughness of mild steel specimen by Izod & Charpy Impact tests.
10	Determination of material hardness using the Brinell Hardness test & Rockwell Hardness test.
11	Determination of torsional rigidity of mild steel specimen.
12	Analysis of load–deflection behaviour of closely coiled helical springs under tension.
13	Analysis of load–deflection behaviour of open coiled helical springs under compression.
14	Tensile Testing of a Mild Steel specimen to evaluate Stress–Strain behaviour and mechanical Properties

Minimum 12 experiments are compulsory

Continuous Internal Evaluation Marks (CIE)

- Attendance : 5 marks
- Preparation/Pre-Lab Work experiments, Viva and Timely completion of Lab Reports / Record (Continuous Assessment) : 25 marks
- Internal Examination: 20 marks

End Semester Examination Marks (ESE)

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

Submission of Record: Students shall be allowed for the end semester examination only upon submitting the duly certified record.

Continuous Assessment (25 Marks)

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.

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.

Lab Reports and Record Keeping (6 Marks)

- 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.

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)

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.

Conduct of Experiment/Execution of Work/Programming (15 Marks)

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

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.

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.

Record (5 Marks)

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

Text Books

1. Junarkar, S. B. (2001). *Mechanics of structures* (Vol. 1). Charotar Publishing House.
2. Khurmi, R. S. (2006). *Strength of materials*. S. Chand Publishing.
3. Lehri, R. S., & Lehri, R. S. (2006). *Strength of materials*. S. K. Kataria & Sons.

Reference Books

1. Bedi, D. S. (2019). *Strength of materials* (6th ed.). Khanna Publishing House.
2. Gupta, J. K., & Gupta, S. K. (2024). *Strength of materials* (2nd ed.). Cengage India.

Video Links (NPTEL, SWAYAM...)

- <https://www.youtube.com/watch?v=vUe8u9htgUY>
- <https://www.youtube.com/watch?v=G1XG3wsEQW8>
- <https://www.youtube.com/watch?v=OKRuvh7kVlQ>
- <https://www.youtube.com/watch?v=Z0VnOkOeK8U>