

COURSE CODE	COURSE TITLE	L	T	P	C
1151AE319	Strength of Materials Laboratory	0	0	2	1

Course Category:

Programme core

a. Preamble:

Strength of Materials Lab demonstrates the basic principles of strength and mechanics of materials through a series of experiments using Universal Testing Machines to calculate tensile strength of steel and aluminum samples and experiments to measure hardness of steels. Students will also test steel samples in single shear, double shear and impact loading, followed by experiments on the torsion testing machine to calculate torsional strength of aluminum samples and the strut apparatus to analyze different modes of buckling in a slender aluminum column.

b. Pre-requisites:

- Engineering Mathematics II

c. Link to Other Courses

- Nil

d. Course Educational Objectives

Students undergoing this course are expected:

- To enhance knowledge in testing of various structural components using different structural testing machines.
- To calculate material properties like tensile, compressive, impact and shear strength.

e. Course outcomes:

On successful completion of this course students will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Estimate hardness of various materials using Brinell and Rockwell hardness tests.	K4,S3
CO2	Determine the deflection of the beams with various loading conditions.	K4,S3
CO3	Operate UTM and calculate tensile strength of various materials.	K4,S3
CO4	Estimate the impact strength of materials using Izod and Charpy testing machines.	K4,S3
CO5	Calculate the linear and torsion stiffness of springs.	K4,S3

(S1-Factual, S2-Conceptual, S3-Procedural, S4-Metacognitive)

f. CORRELATION OF COS WITH PROGRAMME OUTCOMES:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H		H	L	H	H	H	L			
CO2	H	H		H	L	H	H	H	L			
CO3	H	H		H	L	H	H	H	L			
CO4	H	H		H	L	H	H	H	L			
CO5	H	H		H	L	H	H	H	L			

H- High; M-Medium; L-Low

g. LIST OF EXPERIMENTS

1. Brinell Hardness test
2. Rockwell Hardness test
3. Deflection of Beams
4. Tension test
5. Torsion test
6. Izod Impact test
7. Charpy Impact test
8. Testing of helical springs
9. Block Compression Test
10. Shear Test

Total Periods: 30