

Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NFMC515	Mechanical Behaviour of Materials Lab	0	0	3	1.5

Course Objective
The main objective of the lab course is perform different tests for determining mechanical properties
Learning Outcomes
On completion of the course, students will be able to understand how mechanical properties of different materials is determined.

Exp. No.	Name of Experiment	Hours	Learning Outcome
1	Preparation of samples for hardness tests, tensile tests, compression tests, impact tests.	3	Knowledge about the dimensions of samples for different tests
2	Determination of Brinell hardness of a metallic material	3	Performing Brinell hardness tests.
3	Determination of microhardness of a metallic material	3	Vicker's Micro-hardness tests
4	Determination of hardness of a ceramic and a polymeric material	3	Vicker's Micro-hardness tests
5	Determination of tensile properties of a ductile material (Cu or Al)	3	Uniaxial tensile testing
6	Determination of tensile properties of a steel (Plain carbon steel)	3	Yield point phenomenon
7	Determination of tensile properties of a polymeric material (plexiglass, acrylic etc.)	3	Uniaxial tensile testing of polymers
8	Determination of compressive strength of a metallic material	3	Compression tests
9	Determination of compressive strength of green and indurated iron-ore pellet	3	Compression testing of powders
10	Impact testing of steel at different temperature	3	Charpy Impact testing and DBTT curve
11	Determination of fracture toughness of a ceramic by indentation testing	3	Fracture toughness determination by indentation
12	To study the effect of cold rolling on the tensile properties of an aluminium alloy	3	Knowledge of work hardening
13	To study the effect of aging on the hardness of a super-alloy	6	Knowledge of age hardening
Total		42	

Text Books:

1. Mechanical Metallurgy by G. Dieter, 3rd ed., 2017, McGraw Hill

Reference Books:

1. ASTM standards