





Laboratory Name	Material Testing	
<p>Lab Director</p> <p>Dr. Nasir Hayat Email ID: nasirhayat@uet.edu.pk</p>		
<p>Lab In charge</p> <p>Dr. Awais Ahmed Khan Email ID: awais211@uet.edu.pk</p>		
<p>Lab Supervisor</p> <p>Mr. Ehsan Ullah Butt Email :</p>		
<p>Lab Machinist</p> <p>Mr. Ghulam Dastagir Butt Email :</p>		
<p>Lab Technician</p> <p>Muhammad Salman Khaliq Email ID : salmanfiftycent@gmail.com</p>		

Introduction to the Lab:

Materials Testing Lab is actively contributing in teaching and research activities in the Mechanical Engineering Department. The Lab mainly focuses on to provide the latest educational/research facilities in materials testing and materials characterization. Research capabilities include: Universal Testing Machine (30 Ton and 200 Ton), Hardness Testing Machines (Rockwell and Brinell Hardness Testing Machine), Charpy Impact Testing Machine, Creep Testing Machine, Hounsfield Tensometer, Polariscope, Bending and Torsion apparatus, Thick Walled Cylinder apparatus.

Courses supported in the Lab are:

Course Code	Course Name
ME-221L	Mechanics of Materials-I
ME-222L	Mechanics of Materials-II
ME 422L	Mechanics of Materials-III

Equipment Details of Machines at Material Testing Lab

Equipment Details	
Equipment	Manufacturer/Model No.
Charpy Impact Tester	SHIMADZU JAPAN , Capacity 500J, JIS, 1998
Rockwell Hardness Testing Machine	AVERY ENGLAND, TYPE 6402, Part No. 51250
Brinell Hardness Testing Machine	AVERY ENGLAND Capacity 3000kg, Type 6403
Thick Walled Cylinder Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Part No. 9267
Polariscope	NORWOOD INSTRUMENTS LTD. ENGLAND Registered Design No. 858733

Metallic Wire Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 172-07-15280B
Modulus of Rigidity of Rubber Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 122-07-15278B
Beam Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND NR. HUDDERSFIELD. Apparatus No. 9251
Continuous Beam Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 035-07-15276A
Thin Walled Pressure vessel apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 136-08-15279B
Thin Walled Pressure vessel apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 135-08-15273A
Creep Testing Machine	GUNT HAMBURG Germany WP 600 Serial No. 193357
Shape Factor Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Apparatus No. 9270
Shear Force and Bending Moment Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Apparatus No. 9258
Hounsfield Tensometer	TENSOMETER LIMITED ENGLAND Serial No. W6552
Combined Bending and Torsion Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 031-07-15276
Strain Gauge Apparatus	NORWOOD INSTRUMENTS LTD. ENGLAND Serial No. 202-07-15281A Gauge Factors Tensile 2,10 Torsion 2,12 Bending 2,10
Universal Testing Machine 30 Ton	UH-300kNA, SHIMADZU Japan
Universal Testing Machine 200 Ton	CNENAHO B CCCP yMM-200 N 34, Serial No. 7855-81

List of Experiments in ME-221L

1. To draw load-extension curve of a metallic wire and determine the modulus of elasticity of a steel wire
2. To investigate relationship between shear stress and shear strain for rubber and determine the modulus of rigidity of rectangular block of rubber
3. To determine the modulus of rigidity of a circular steel shaft subjected to torsion
4. To determine the central deflection of a simply supported beam subject to a concentrated load at mid point
5. To determine the load point deflection of a simply supported beam subjected to an eccentric load at a midpoint
6. To determine the central deflection of a fixed beam subjected to a concentrated load at mid point
7. To determine the load point deflection of a simply supported beam subjected to an eccentric load at a midpoint
8. To determine the load point deflection of a cantilever beam subjected to a concentrated load at free end. To determine the elastic strain energy stored in a circular brass shaft subjected to torsion
9. To determine the load point deflection of a propped beam subjected to a concentrated load at mid point.
10. To determine the elastic strain energy stored in a circular steel shaft subjected to torsion
11. To verify the laws of shearing and bending moment
12. To determine the modulus of rigidity of a brass shaft subjected to torsion

List of Experiments in ME-222L

1. Parametric analysis of simply supported beam subjected to point load

2. Parametric analysis of fixed end beam subjected to point load
3. Parametric analysis of cantilever beam subjected to point load
4. To determine the diametrical deflection of a circular ring subjected to diametrical load
5. To determine the deflection components of semi-circular ring
6. To determine the deflection components of a quarter-circular ring
7. To determine the deflection components of an extended quarter circular ring
8. To perform the charpy impact test and determine the CIV for the V-notched specimen
9. To perform tensile test on a given specimen by using Hounsfield Tensometer and determine the mechanical properties of the material
10. To perform Rockwell hardness test and determine the hardness of the given specimen
11. To perform Brinell hardness test and determine the hardness of the given specimen
12. To determine the stresses in an internally pressurized thin walled cylinder
13. Introduction to engineering material codes (ASTM, DIN, BS)
14. To Carry out creep test on the given plastic specimen
15. To perform Torsion test and determine the modulus of resilience and modulus of toughness for the given specimen

List of Experiments in ME-422L
1. To perform the Bend Test and determine the Shape Factor of the Cantilever Beam specimen having circular cross-section
2. To determine the Torsional Resilience and Modulus of Toughness under torsion in a mild steel specimen. Also, find the ratio TFP/TFY
3. To perform Tensile Test on Universal Testing Machine (UTM) having capacity 300kN
4. To perform Compression Test on Universal Testing Machine (UTM) having capacity 300kN
5. To perform Bend Test on Universal Testing Machine (UTM) having capacity 300kN

6. To determine Rockwell Hardness Values of mild steel specimens on B and C scale by applying minor and major loads
7. To determine Brinell Hardness Value of mild steel specimens
8. To investigate the working and use of quarter, half and full bridge configurations of strain gages
9. To determine the Axial and Tangential Strains in a thick cylinder subjected to internal pressure and thereby calculate Axial and Tangential Stresses
10.To determine the strain developed in a thin cylinder subjected to internal pressure
11.To determine the Material Fringe Value of a photo elastic circular test piece under compression
12.To determine the tensile stresses in a photo elastic material using a polariscope
13.To analyze the formation of isoclinic and isochromatic fringe patterns in plane and circular polariscope



Figure 1 Corner's View of Materials Testing Lab



Figure 2 Stairs View of Material Testing Lab



Figure 3 Isometric View of materials Testing Lab



Figure 4 Diametric View of Materials Testing Lab



Figure 5 Schimadzu Universal Testing Machine 30 Ton



Figure 6 Universal Testing Machine 200 Ton



Figure 7 Charpy Impact Testing Machine



Figure 8 Rockwell Hardness Testing Machine



Figure 9 Thick Walled Pressure Vessel



Figure 10 Brinell Hardness Testing Machine



Figure 11 Polariscope



Figure 12 Modulus of Rigidity



Figure 13 Spring Coil Apparatus



Figure 14 Beam Apparatus



Figure 15 Bending and Torsion Combined Apparatus



Figure 16 Shear Force and Bending Moment Diagram Apparatus



Figure 17 Combined Bending and Torsion of Beam Apparatus

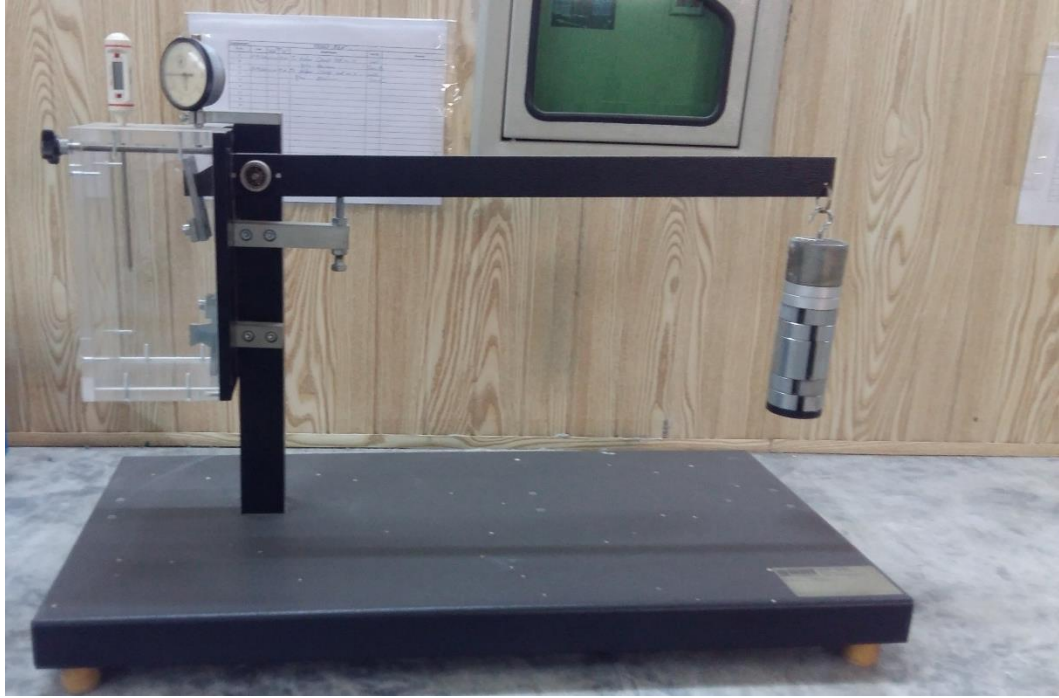


Figure 18 Creep Testing Machine



Figure 19 Thin Walled Cylinder Apparatus

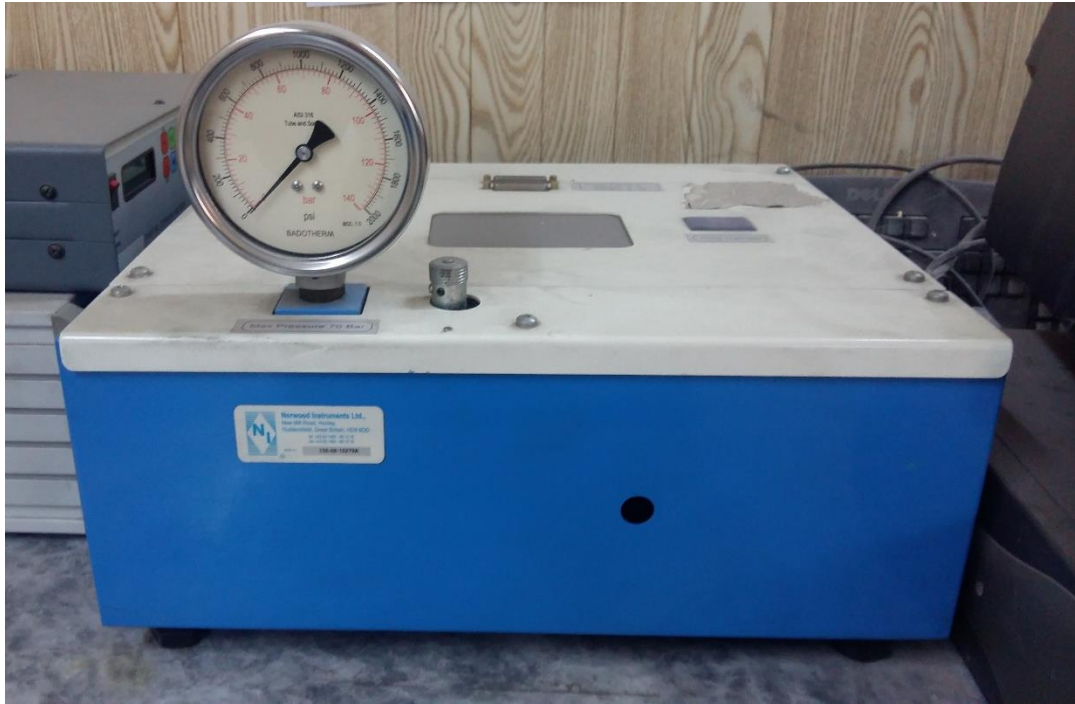


Figure 20 Thick Walled Cylinder Apparatus



Figure 21 Deflection of Flat Plate



Figure 22 Shape Factor Apparatus



Figure 23 Combined Bending and Torsion Apparatus



Figure 24 Strain Gauge Apparatus



Figure 25 Bending and Torsion Combined Apparatus