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OFFICE NOTE

Research is an integral and important part of any engineering education system. JNGEC is making good efforts to create a research ambiance and develop a strong research culture amongst faculty and students. Teachers conduct research as an integral part of their responsibilities since this enables them to assimilate and disseminate the knowledge as well as generate new knowledge. JNGEC is granting the funding support i.e. the cost of best projects undertaken by students and faculties, participation in International / National conferences to strengthen the research and development activities every year. Laboratories have been set up in all the departments by adding the new latest equipments, which are procured under TEQIP Projects.

Under the R&D activities at JNGEC, the main focus on to increase involvement of B.Tech Students in developing innovative ideas and converting them into working prototypes and to enhance industry institute interaction for getting consultancy opportunities.

The numerous facilities (Annexure-I) are available in the institute to provide research, consultancy and testing facilities to the various government departments, nearby industries and for research scholars pursuing master's and Ph.D level programmes.


Dean (Research & Consultancy)
Jawaharlal Nehru Govt Engg College
Sundernagar Mandi HP

J N Government Engineering College, Sundernagar
Research, Consultancy and Testing Facilities

DEPARTMENT OF CIVIL ENGINEERING			
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Concrete Lab			
S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
1	Universal Testing Machine	Tensile, compression, bending tests on samples of cement, concrete, steel, bricks, etc.	PWD, NBCC, Any Govt./Pvt. Companies involved in Construction
2	Compression Testing Machine	Direct compression and spilt tensile strength on samples of cement concrete, bricks, etc.	
3	Vee-Bee Consistometer	Workability tests on fresh concrete	
4	Slump Test	Workability tests on fresh concrete	
5	Compaction Factor Test	Workability tests on fresh concrete	
6	V-Funnel Apparatus	Workability tests on fresh concrete	
7	Digital Rebound Hammer	Non-Destructive Testing of components of structures	
8	Ultrasonic Pulse Velocity Tester	Non-Destructive Testing of components of structures	
9	Flexure Testing Machine	Flexure test on samples of concrete	
10	Vicat Apparatus	Setting time, consistency of cement	
11	Le – Chateleir Apparatus	Soundness of cement	
12	Permeability Apparatus	Permeability of samples of concrete	
13	Tensile Strength Testing Machine	Tensile strength of cement samples	
14	Sieve Set	Grain size distribution and analysis of aggregates	
Geotechnical Engineering Lab			
S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests

1.	Relative Density Apparatus	Relative density test	PWD, NBCC, Irrigation & PH Department, Any Govt./Pvt. Companies
2.	Triaxial Test Apparatus	Shear strength test	
3.	Direct Shear Apparatus	Shear strength test	
4.	Liquid Limit Apparatus	Liquid limit test	
5.	Consolidometer	Consolidation test	
6.	Permeameter	Permeability test	
7.	Pycnometer	Specific gravity test	
8.	Universal Automatic Compactor	Compaction test	
9.	Motorised Load Frame	Unconfined compression test, California bearing ratio test	
10.	Sieve Set	Grain size analysis	
11.	Proctor Compaction apparatus	Proctor compaction test	
12.	Sand Pouring Cylinder	In situ density	
13.	Specific Gravity Bottle	Specific gravity test	

Highway Engineering Lab

S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
1	California Bearing Ratio Machine	Bearing Ratio of Soil	PWD, Any Government and Private Construction Companies
2	Ductility Testing Machine	Ductility of Bitumen And Its Suitability For Road Construction	
3	Los Angeles (L.A.) Abrasion Test	Abrasion Testing of Abrasive Solid Materials.	
4	Stripping Value Test	To Ascertain The Suitability of The Two Materials Viz. Bitumen (Binder) and Aggregates	
5	Humidity Chamber	Durability of Different Soil Samples	
6	Ring And Ball Appartus	Softening Point of Bitumen, Waxes, LDPE, HDPE/PP Blend Granules, Rosin and Solid Hydrocarbon Resins	
7	Specific Gravity	Specific Gravity of Aggregates	

Environmental Engineering Lab

S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
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1	UV-Vis Spectrophotometer	Physical & Chemical Parameters of water & wastewater	IPH, Govt. /Private Organizations related to Water Quality Testing
2	Water Quality Kit		
3	Turbidimeter		
4	Portable Colorimeter		
5	Chlorine Test Kit		
6	BOD Apparatus		
7	COD Digestion Reactor		
8	Research Grade pH/ORP & EC/TDS meter		
9	Research Grade DO/BOD meter		
10	MPN Bacteriological Kit	Bacteriological Test	

Rock Mechanics Lab

S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
1	Rock Toughness Tester	Toughness of Rock	PWD Any Govt./Pvt. Companies involved in Construction
2	Rock Permeability Apparatus	Permeability of Rock	
3	Automatic Compression Testing Machine 2000 Kn	Compression tests on samples of rock, cement, concrete, bricks, etc.	
4	Cutting And Polishing Machine	Cutting And Polishing of rock sample	
5	Rock Bolt Pull Out Test Apparatus	Rock Bolt Pull Out	
6	Brazilian Test Apparatus	Brazilian Test	

Surveying Lab

S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
1	DGPS	Data collation from field	PWD, IPH, Any Govt./Pvt. Companies involved in Construction
2	TOTAL STATION	Data collation from field	
3	GPS	Data collation from field	

4	Digital Auto level	Data collation from field
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Software Lab

S.No.	Major Equipments	Tests which can be performed	Target Agency/organization which can conduct tests
1	STAAD-PRO-Connect edition	All types of structures design starting from concrete, steel to aluminium, timber and even piping design. Both static and dynamic analysis can also be performed	PWD, PWD (Highway wing), IPH & Any Govt./Pvt. Companies involved in Construction
	Open roads- Connect edition	MX Road is an excellent string-based modelling tool that enables the rapid and accurate design of all types of roads. Individuals such as civil engineers, designers, surveyors, system designers can access 3D modelling, construction driven engineering, and other analysis all in one engineering application.	
	Water gems, sewer gems-connect edition	To model, & analyse water supply network & sewer network	
2	ATENA 5.1	Non-linear analysis of reinforced concrete structures.	

DEPARTMENT OF TEXTILE ENGINEERING

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S.No	Major Equipment	Name of Test	Target Agency / organization which can conduct tests
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FIBRE TEST

1.	Digital Projection Microscope	Microscopic Identification of fibre (Longitudinal view only)	Research Scholars and Textile Industries
2.	Glasswares	Chemical Identification of fibre	

3.	Fourier Transform Infrared (FT-IR) Spectrometer	FTIR Analysis of Fibre/Fabric
4	Simultaneous Thermal Analyser	Differential Scanning Calorimetric Analysis of Fibre/Fabric
5	Oven Dry Method	Moisture Content
6	(Projection Microscope)	Fibre Diameter
7	Micronaire tester	Fibre Micronaire
8	(Projection Microscope)	Fibre Maturity (NaOH Swelling Method) 100g
9	Comb Sorter	Fibre Length
10	Trash Analyser	Trash %

YARN TEST

1	Wrap reel and digital weighing balance	Yarn count	Research Scholars and Textile Industries
2	Automatic tensile strength tester	Single Yarn Strength	
3	Automatic tensile strength tester	Lea Strength	
4	Twist tester	Single Yarn TPI	
5	Twist tester	Plied Yarn TPI	

FABRIC TEST

1	GSM Cutter	Fabric GSM	Research Scholars and Textile Industries
2	Thickness tester	Fabric Thickness/Length/Width	
3	Thread count tester	Ends And Picks Per Inch	
4	Beesley balance	Yarn Count(from fabric sample)	
5	Pick glass and Magnifying glass	Warp & Weft Crimp %	
6	Pick glass	Type of Weave	
7	Pick glass and Magnifying glass	Fabric Cover Factor	
8	Automatic tensile strength tester	Grab Test	
9	Automatic tensile strength tester	Strip Test	

10	Automatic tensile strength tester	Seam Strength
11	Automatic tensile strength tester	Seam Slippage
12	Automatic tensile strength tester	Snap Button Pull Strength
13	Automatic tensile strength tester	Zipper Strength
14	Water Vapour Permeability tester	Water Vapour Permeability (Cup Method)
15	Automatic tensile strength tester	Tear Strength (Tongue Tear Test)
16	(Elmendorf tear strength tester	Tear Strength
17	Crease recovery tester	Crease Recovery Test
18	(ICI Pilling Box)	Pilling Resistance
19	Bursting strength tester	Bursting Strength Test
20	Shirley stiffness tester	Stiffness Test
21	45° Flammability tester	Inclined (45°) Flammability Test
22	Flat plate thermal conductivity tester	Thermal conductivity tester
CHEMICAL TESTING		
1	Chemicals Equipments	Scouring loss, Barium activity number ,Identification of class of dyes for cellulose
2	Washing fastness tester	Dimensional changes on washing
3	Fastness equipment	Colour fastness testing
a.	Light fastness machine	Artificial light
b.	Washing fastness machine	Washing fastness
c.	Sublimation tester	Sublimation testing
d.	Crockmeter	Rubbing fastness (dry/wet)

Research Scholars and Textile Industries

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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Major Software's/ Tools

S.No.	Name of Machine/Equipments	Quantity	Target Agency/ organization which can conduct tests
1	Matlab Software (version-2018)	25 user	All research students / Nearby design industry
2	Lab view software (version-2019)	25 user	
3	Net sim software (version-2019)	5 user	
4	Tina software (simulation software)	25 user	
5	HFSS VI9 Software	5 user (research version)	

Hardware available

1	Printed circuit board fabrication Machine	1	All research students / Nearby design industry
2	Microwave benches	4	
3	Optical lab kits	4	
4	Power meter	2	
5	Cathode Ray Oscilloscope	10	
6	Digital storage Oscilloscope	8	
7	Function Generators	8	
8	Analog & digital Multimeters	10	

DEPARTMENT OF MECHANICAL ENGINEERING

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S.No.	Name of Equipment	Scope of Experimentation	Target Agency / organization which can conduct tests
1	Universal Hardness Tester (UHT)	Hardness Tests of Metals	Research scholars (PG and Ph.D)
2	Electric Discharge Machine (EDM)	Used for processing of precision dies, cavity molds, small holes, special-shaped holes.	