

*An Information Booklet*

on

# TESTING AND CONSULTANCY SERVICES



Mechanical Engineering Department  
NIT Raipur (CG)

March 2022

# List of Contents

<b>S.N.</b>	<b>Content</b>	<b>Page no.</b>
<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Brief detail of the testing facilities and its charges</b>	<b>4-14</b>
	a) Mechanical property characterization of polymers and soft matters (Universal Testing Machine – 10kN)	<b>5</b>
	b) Opto-Mechanical structure and composition characterization (Optical Microscope Equipment)	<b>6</b>
	c) Rheology characterization of liquids, semisolids, emulsion, paints and slurries (Modular Compact Rheometer – MCR 102)	<b>7</b>
	d) Electric-discharge machining of conductive materials (EDM Equipment)	<b>8</b>
	e) Surface roughness testing (Surface Roughness Tester)	<b>9</b>
	f) Drying and curing of different materials (Vacuum Oven Equipment)	<b>10</b>
	g) Drying and curing of different materials (Hot Air Oven Equipment)	<b>11</b>
	h) To perform welding operation by MIG, TIG and SAW welding machine	<b>12</b>
	i) Thermal properties analysis of liquids and solid insulating materials (KD2 Pro Thermal Property Analyzer)	<b>13</b>
	j) Mechanical property characterization of metal rods and construction material (Universal Testing Machine – 200 kN)	<b>14</b>
<b>3</b>	<b>Charges for consultancy services</b>	<b>15-16</b>
<b>4</b>	<b>Forms</b>	<b>17-19</b>
	a) Job requisition letter for testing - Internal	<b>18</b>
	b) Job requisition letter for testing - External	<b>19</b>

## Introduction to testing and consultancy services

Mechanical Engineering Department in-houses many modernized laboratories. These are facilitated with various specialized and high-end equipment. These are currently in use for various academic and research facilities for UG, PG and PhD research scholars of the institute. Equipment are being opened for providing different testing and consultancy services to other academic institutions / centers, research labs and industry sector etc. This booklet is meant to provide a brief of various testing and consultancy services being offered by Mechanical Engineering Department. Potential users may go through this booklet to have overview of these services. Interested organizations / persons may contact **Head (Mechanical Engineering Department), NIT Raipur (CG) [mail ID: [hod.mech@nitrr.ac.in](mailto:hod.mech@nitrr.ac.in)]** to avail the benefits of these services being offered.

### List of Facilities Available:

S.No	Equipment/ Facility Name	Enclosure
1.	Universal Testing Machine 10 kN	Enclosure -1
2.	Optical Microscope	Enclosure -2
3.	Modular Compact Rheometer (MCR 102)	Enclosure -3
4.	Electric-discharge machine (Die-sinking)	Enclosure -4
5.	Surface Roughness Tester	Enclosure -5
6.	Vacuum Oven	Enclosure -6
7.	Hot Air Oven	Enclosure -7
8.	MIG, TIG and SAW based welding machine & equipment	Enclosure -8
9.	KD2 Pro Thermal Properties Analyzer	Enclosure -9
10.	Universal Testing Machine 200 kN	Enclosure -10

### Division of testing charges categories:

Category A	Persons of NIT Raipur (CG)
Category B	Other academic Institutes and any funded projects (including projects of host Institute)
Category C	Industries and other agencies

## Testing Services and Charges - In Brief

**Enclosure -1****Brief detail of testing charges for Universal Testing Machine (10 kN)**

- 1. Name of Equipment:** Universal Testing Machine
- 2. Make and Model:** HEICO Universal Testing Machine (10 kN)
- 3. Applications:** Mechanical characterization of materials.
- 4. Type of tests possible:** Tensile, Compression, Relaxation and Creep test at room temperature.
- 5. Testing charges for various categories:**

S.N.	Service description	Charges for Category A	Charges for Category B	Charges for Category C
1	<b>Tensile and Compressive Test</b>	₹ 100 per Sample	₹ 500 per Sample	₹ 850 per Sample
2	<b>Relaxation Test</b>	₹ 200 per Sample	₹ 750 per Sample	₹ 1000 per Sample
3	<b>Creep Test</b>	₹ 300 /Hr./Sample	₹ 1000 /Hr./Sample	₹ 1500 /Hr./Sample

The above charges may be modified time to time. These charges are inclusive of GST@18%.

\*\* NOTE: Charges for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

**6. Contact detail of the faculty member:**

**Dr. Raj Kumar Sahu**, Assistant Professor, Department of Mechanical Engineering, Mob- +91 76949 79520, Email- [rksahu.mech@nitrr.ac.in](mailto:rksahu.mech@nitrr.ac.in) , [raj.mit.mech@gmail.com](mailto:raj.mit.mech@gmail.com)

**Enclosure -2****Brief detail of testing charges for Optical Microscope equipment**

**1. Name of Equipment:** Optical Microscope

**2. Make and Model:** Olympus Inverted Microscope GX53

**3. Applications:** Mechanical characterization of materials.

**4. Type of tests possible:** Granular structure calculation, composite composition calculation, surface filler distribution imaging.

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	<b>Finished Sample (Polished and Etched)</b>	₹ 50 per Sample	₹ 250 per Sample	₹ 500 per Sample
2	<b>Unfinished Sample (Preparation Required)</b>	₹ 1000 per sample	₹ 1500 per sample	₹ 2500 per sample

The above charges may be modified time to time. These charges are inclusive of GST@18%.

\*\* NOTE: Charges for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

**6. Contact detail of the faculty member:**

**Dr. Raj Kumar Sahu**, Assistant Professor, Department of Mechanical Engineering, Mob- +91 76949 79520, Email- [rksahu.mech@nitrr.ac.in](mailto:rksahu.mech@nitrr.ac.in) , [raj.mit.mech@gmail.com](mailto:raj.mit.mech@gmail.com)

**Enclosure -3****Brief detail of testing charges for Rheology Measuring Facility****1. Name of Equipment:**

Modular Compact Rheometer (MCR – 102) [with cone and plate, parallel plate, concentric cylinder and vanned type measuring chambers] Rotational and Oscillatory features – both.

**2. Make and Model:**

Anton Paar Gmbh, Austria [Model No. MCR 102]

**3. Applications:**

Rheological characterizations of industrial process fluids/semi solids like Dairy, Chocolate, Pharmaceuticals, Food Products & Beverages, Pesticides, Paints, Mineral Slurries, Powder, etc.

**4. Type of tests possible:**

Steady state rheology characteristics, Yield stress measurements, Stress relaxation measurement, Shear rate step-change measurement, Hysteresis loop, Thixotropy shear test, Oscillatory shear measurements.

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	Common for all the tests	Rs 50/- per sample per test	Rs 200/- per sample per test	Rs 1000/- per sample per test

The above charges may be modified time to time. These charges are inclusive of GST@18%.

\*\* NOTE: Changes for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

**6. Contact detail of faculty member:**

**Dr. Satish Kumar Dewangan**, Assistant Professor (Mech. Engg.), NIT Raipur (CG) 492010, Mobile: 94060-75050, [skdewangan.mech@nitrr.ac.in](mailto:skdewangan.mech@nitrr.ac.in)

**Enclosure -4****Brief detail of testing charges for Electrical-discharge machining (Die-Sinking) equipment /facility****1. Name of Equipment:** Electrical-discharge machining (Die-Sinking)**2. Make and Model:** Medha Enterprises, Kanpur and ZNC-435.**3. Applications:**

- Machining of various conductive materials used in Aerospace, Automobile and Tool & Die making industries.
- Stamping application like surface texturing, profile creation etc. of different shapes on the conductive material surface.
- Tool preparation for different applications
- Cutting of various conductive work specimens

**4. Type of tests possible:** Machining of various conductive materials; Stamping and Tool preparation & cutting of different conductive materials.**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	<b>Cutting of different conductive material</b>	₹ 500 /sample /slot*	₹ 800 per sample/ slot*	₹ 1500 per sample/ slot*
2	<b>Stamping of different conductive material &amp; Tool preparation</b>	₹ 500 per sample/ slot*	₹ 800 per sample/ slot*	₹ 1500 per sample/ slot*
3	<b>Machining of different conductive material</b>	₹ 500 per sample/ slot*	₹ 800 per sample/ slot*	₹ 1500 per sample/ slot*

The above charges may be modified time to time. These charges are inclusive of GST@18%.

**\*\* NOTE:** Changes for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

\*Slot implies to Max. 3 Hour.

**6. Contact detail of the faculty member:**

**Dr. Jagadish**, Assistant Professor, Deptt. of Mechanical Engg., NIT Raipur, Mobile: +91-8811940517 / +91-9113270595, Email: jagadish.mech@nitrr.ac.in

**Enclosure -5**

Brief detail of testing charges for **Surface Roughness Tester** equipment /facility

**1. Name of Equipment:** Surface Roughness Tester

**2. Make and Model:** ZEISS and Surfcom Touch 50

**3. Applications:** Portable Surface Roughness Tester (Surfcom Touch 50) allows surface roughness measurement both on metal and non-metal workpieces. It is suitable for machining and manufacturing, quality control, inspection departments, especially for measurement on large and heavy workpiece, assembly line on site. The Surfcom Touch 50 is a Non-Destructive Testing instrument, damage won't cause to testing piece.

**4. Type of tests possible:**

Measurement of different roughness parameters like Ra,Rz,Rq,RtRp,Rv,R3z etc. for on metal and non-metal workpieces having various surface profiles

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	Surface Roughness Measurement of different work (Metallic & Non-Metallic) materials	₹ 100 per Slot*	₹ 200 per Slot*	₹ 250 per Slot*

The above charges may be modified time to time. These charges are inclusive of GST@18%.

Note: \*Maximum 3 samples in a slot (one slot implies to 1 Hour).

**6. Contact detail of the faculty member:**

**Dr. Jagadish**, Assistant Professor, Deptt. of Mechanical Engg., NIT Raipur, Mobile: +91-8811940517 / +91-9113270595, Email: jagadish.mech@nitrr.ac.in

**Enclosure -6****Brief detail of testing charges for Vacuum oven equipment /facility**

**1. Name of Equipment:** Vacuum oven

**2. Make and Model:** STERICOX and STXR V095

**3. Applications:**

It is used in drying and curing processes within industries such as pharmaceuticals, textiles, paper, ceramics, and rubber. Additionally, vacuum ovens form part of an important process for removing solvents from botanical extractions

**4. Type of tests possible:** Drying & Heating of Different Materials@ 200<sup>0</sup>C (Max.)

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	Drying and Curing of Metallic & Non-Metallic Materials	₹ 150 per slot*	₹ 250 per slot*	₹ 500 per slot*

The above charges may be modified time to time. These charges are inclusive of GST@18%.

**Note:** \*Maximum 3 samples in a slot (one slot implies to Max. 3 Hour).

**6. Contact detail of the faculty member:**

**Dr. Jagadish**, Assistant Professor, Deptt. of Mechanical Engg., NIT Raipur, Mobile: +91-8811940517 / +91-9113270595, Email: jagadish.mech@nitrr.ac.in

**Enclosure -7****Brief detail of testing charges for Hot Air Oven equipment / facility**

**1. Name of Equipment:** Hot Air Oven

**2. Make and Model:** META-LAB scientific industries, Mumbai and MSI-5

**3. Applications:**

- It helps in the elimination of moisture from the material thus it is used in curing, drying, baking, and annealing.
- It is used to dry glassware, sterilize N95 masks, general instruments, and packaging items in life science, microbiology laboratory.
- It is also used in chemical and pharmaceutical industries, food and beverage industries, textile industries.
- In certain laboratories and hospitals, it is used to store materials at a constant temperature up to temperature 250°C).

**4. Type of tests possible:** Drying & Heating of Different Materials @ 200<sup>0</sup>C (Max.)

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	Drying and Heating of Metallic & Non-Metallic Materials	₹ 100 per slot*	₹ 250 per slot*	₹ 500 per slot*

The above charges may be modified time to time. These charges are inclusive of GST@18%.

**Note:** \*Maximum 4 samples in a slot (one slot implies to Max. 3 Hour).

**6. Contact detail of the faculty member:**

**Dr. Jagadish**, Assistant Professor, Deptt. of Mechanical Engg., NIT Raipur, Mobile: +91-8811940517 / +91-9113270595, Email: jagadish.mech@nitrr.ac.in

**Enclosure -8****Brief detail of testing charges for Welding and Joining equipment/facility**

**1. Name of Equipment:** MIG/TIG/SAW welding machines

**2. Make and Model:** EWAC-ZUPER MIG 500I / NEC-TIG300 / NEC- ARC 1420

**3. Applications:** To perform the joining operation of metals for wide range of applications such as automobile, aerospace, pressure vessel, naval, structural industries

**4. Type of tests possible:** All type of joints (butt, V-, double V-, T-, Lap- and multi pass- joints, etc.) is possible by trained staff.

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	Joining and welding via MIG welding	Rs 100/- per 100mm /weld pass	Rs 500/- per 100mm /weld pass	Rs 1000/- per 100mm /weld pass
2	Joining and welding via TIG welding	Rs 200/- per 100mm /weld pass	Rs 700/- per 100mm /weld pass	Rs 1500/- per 100mm /weld pass
3	Joining and welding via SAW welding	Rs 500/- per 100mm /weld pass	Rs 1500/- per 100mm /weld pass	Rs 2500/- per 100mm /weld pass

Term and conditions:

1. The above welding charges will be applicable for a single pass.
2. The filler wires/electrodes for specific grades of metal will be provided by the candidates.
3. Flux or shielding gases (e.g. He, Ar) will be provided by our organization.

The above charges may be modified time to time. These charges are inclusive of GST@18%.

**6. Contact detail of the faculty member:**

1. Dr. S. Vaidya, Workshop In charge, Mechanical Engineering, NIT Raipur
2. Dr. H. K. Narang, Assistant Professor, Mechanical Engineering, NIT Raipur
3. Dr. Sanjeev Kumar, Assistant Professor, Mechanical Engineering, NIT Raipur

**Enclosure -9****Brief detail of testing charges for KD2 Pro equipment**

**1. Name of Equipment:** “KD2 Pro” Thermal Properties Analyzer

**2. Make and Model:** Decagon Devices, Inc.

**3. Applications:** To measure the thermal properties of liquids and solid insulating materials.

**4. Type of tests possible:** Measurement of Thermal Conductivity, resistivity, volumetric specific heat capacity and diffusivity.

**5. Testing charges for various categories:**

S.N.	Service description	Category A	Category B	Category C
1	<b>Test /Analysis name:</b> <b>1. Thermal Conductivity</b> <b>2. Resistivity</b> <b>3. Volumetric specific heat capacity</b> <b>4. Diffusivity</b>	Rs 200/- per sample (At any one Temperature)	Rs 500/- per sample (At any one Temperature)	Rs 1000/- per sample (At any one Temperature)

Classes for sponsored / funded STTP/Workshop will be charged on hourly basis – Rs 500 / - per hour.

The above charges may be modified time to time. These charges are inclusive of GST@18%.

**\*\* NOTE:** Changes for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

**6. Contact detail of the faculty member:**

**Dr. Vivek Kumar Gaba**, Mechanical Engineering, NIT Raipur, Email: [vgaba.mech@nitrr.ac.in](mailto:vgaba.mech@nitrr.ac.in)

**Enclosure -10****Brief detail of testing charges for Universal Testing Machine (200 kN) equipment**

- 1. Name of Equipment:** Universal Testing Machine (200 KN)
- 2. Make and Model:** UH-200kN.
- 3. Applications:** Mechanical characterization of materials
- 4. Type of tests possible:** Tensile strength, Compressive Test, Bend Test of different conductive materials.
- 5. Testing charges for various categories:**

S.N.	Service description	Category A		Category B		Category C	
		D≤20 mm	D>20 mm	D≤20 mm	D>20 mm	D≤20 mm	D>20 mm
1	<b>Tensile Test</b>	₹ 200	₹ 200	₹ 300	₹ 300	₹ 600	₹ 700
2	<b>Bend Test</b>	₹ 200	₹ 200	₹ 300	₹ 300	₹ 600	₹ 700
3	<b>% Elongation Test</b>	₹ 100	₹ 100	₹ 200	₹ 200	₹ 400	₹ 600
4	<b>Weight per Meter</b>	₹ 100	₹ 100	₹ 200	₹ 200	₹ 300	₹ 300
5	<b>Nominal Diameter</b>	₹ 100	₹ 100	₹ 200	₹ 200	₹ 400	₹ 400

\*Sample Diameter ≤ Ø 20 mm. \*\* Sample Diameter > Ø 20 mm.

The above charges may be modified time to time. GST will be charged over these @18%.

NOTE: Changes for sample preparation & processing will be over and above the testing charges (mentioned above) and will be borne by vendor.

**6. Contact detail of the faculty member:**

**Dr. R. Salhotra**, Professor, Department of Mechanical Engineering, Mob- +91 9424218342, Email- [rsalhotra.mech@nitrr.ac.in](mailto:rsalhotra.mech@nitrr.ac.in)

# Consultancy Services and Charges



**Department of Mechanical Engineering**  
**NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR**  
(Institute of National Importance)  
G.E. Road, Raipur – 492010 (C.G.)

**Enclosure -11**

**Charges for Consultancy Services**

Any organization / persons interested in seeking for consultancy services from Mechanical Engineering Departments Experts may send request to **DIRECTOR, NIT RAIPUR (CG) [with a copy to Head (Mechanical Engineering Department), NIT Raipur (CG)]**. The charges of the consultancy services will be decided on case-to-case basis. The charges for TA, DA, local travel, boarding and others expenditure will be borne by organization / persons, if needed, for the respective consultancy work. These charges should be paid as per the institute norms. Consultancy services are provided in all the areas of Mechanical Engineering. The details of expertise of faculty members are available in the NIT Raipur website at following link:

<http://www.nitr.ac.in/aboutmechanical.php>

Interested organizations / persons may visit the website for detailed faculty profile & area of their expertise to avail the benefits of these services being offered.

# Job Requisition Forms

**Enclosure -12****Job Requisition Letter - Internal****(NIT Raipur persons / Any Funded projects running in NIT Raipur)**

**To,**  
**Head (Mech. Engg. Deptt.)**  
**NIT Raipur (CG)**

Subject: .....

Through: proper channel (Supervisor/Funded Project PI and Head of the concerned Department)

Respected sir, following is details regarding our testing requirement.

1. Name of the user: \_\_\_\_\_
2. ContactDetail(Mobile.No. & Institute EmailID): \_\_\_\_\_
3. Are you (Tick on  Funded projects  NIT Raipur persons
4. Are you (Tick on  UG Student  PG Student  Ph.D. Scholar
5. Designation and Department:  
 \_\_\_\_\_  
 \_\_\_\_\_
6. Sample material details (Nature, Grade, Composition, etc.): \_\_\_\_\_  
 \_\_\_\_\_
7. Test / facilities required: \_\_\_\_\_
8. Details of the test to be conducted: \_\_\_\_\_  
 \_\_\_\_\_
9. Any specific requirement for test (if any): \_\_\_\_\_
10. Specific parameters user want to study: \_\_\_\_\_
11. a. Number of samples: \_\_\_\_\_ b. Time duration for completion: \_\_\_\_\_
10. Payment status: Yes / No
11. Payment details (including amount, transaction ID, date and document proof) –  
*(This should be as per the charges mentioned in the website for respective tests)*
12. Any other details (if needed).

**Signature (with date) & Name of user**

**Job Requisition Letter - External**  
**(Other academic institutions / Industries / Other agencies)**

**To,**  
**The Director,**  
**NIT Raipur (CG)**

Subject: .....

*[Kind attention to HOD (Mech. Engg.)]*

Respected sir, following is details regarding our testing requirement.

1. User name: \_\_\_\_\_
2. Mobile.No. &EmailID: \_\_\_\_\_
3. Address and contactdetails and affiliating organization: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Sample material details (Nature, Grade, Composition, etc.): \_\_\_\_\_  
\_\_\_\_\_
5. Test / facilities required: \_\_\_\_\_
6. Details of the test to be conducted: \_\_\_\_\_  
\_\_\_\_\_
7. Any specific requirement for test (if any): \_\_\_\_\_
8. Specific parameters user want to study: \_\_\_\_\_
9. a. Number of samples: \_\_\_\_\_ b. Time duration for completion: \_\_\_\_\_
10. Payment status: Yes / No
11. Payment details (including amount, transaction ID, date and document proof) –  
*(This should be as per the charges mentioned in the website for respective tests)*
12. Any other details (if needed) \_\_\_\_\_

**Signature of user (& organizations) with seal**