



## **MATERIAL TESTING LABORATORY**

### **Details of Laboratory:**

#### **Lab in-charge: Mr. Arijit Patra**

Material Testing Laboratory is a well equipped laboratory which provides ideas on the practical knowledge of test several properties of material like ductility, surface roughness, malleability, hardenability etc. This laboratory is scheduled for 4<sup>th</sup> semester Mechanical engineering students. Apart from curriculum, some additional experimental setups are there which helps the students to enhance their knowledge. Students also get opportunity to implement their ideas through various application oriented micro projects.

### **Major Equipments.**

- 1                      Engineering D
- 2                      Impact strength (Izod Test)
- 3                      Fatigue Test
- 4                      Sample preparation and etching of ferrous metal specimen
5.                      Heat treatment of carbon steel specimen
6.                      Surface/sub s surface cracks of a welded joint by ultrasonic testing machine.
7.                      Observation of presence of surface and sub surface cracks by dye penetration test.

### List of Experiments.

| Sl. | Description                                                                                                                            |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| 1   | To determine the impact strength of a specimen by Charpy impact method.                                                                |
| 2   | To determine the impact strength of a specimen by Izod impact method.                                                                  |
| 3   | To determine the fatigue strength of a sample specimen by fatigue testing method.                                                      |
| 4   | Sample preparation and etching of ferrous metal specimen for metallographic observation.                                               |
| 5.  | Experiments on heat treatment of carbon steel specimen under different rates of cooling and investigate the hardenability of specimen. |
| 6.  | Observation of presence of surface/sub-surface cracks of a welded joint by ultrasonic testing machine.                                 |
| 7.  | Observation of presence of surface and sub surface cracks by dye penetration test.                                                     |

## Lab Occupancy

JIS College of Engineering

Lecture and Lab schedule for even semester 2017-2018    STREAM/BATCH: ME- 2A

B.Tech 2<sup>nd</sup> Year classes    Room No. 317

| DAYS | 10 am to 11 am | 11 am to 12 am | 12 pm to 1pm | 1 to 2pm                              | 2 to 3pm | 3 to 4 pm              | 4 to 5 pm | 5 to 6 pm |
|------|----------------|----------------|--------------|---------------------------------------|----------|------------------------|-----------|-----------|
| MON  |                |                |              | B<br><br>R<br><br>E<br><br>A<br><br>K |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
| TUE  |                |                |              |                                       |          | ME 493, Gr.ME2A(2)[AS] |           |           |
|      |                |                |              |                                       |          |                        |           |           |
| WED  |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
| THU  |                |                |              |                                       |          | ME 493, Gr.ME2A(1)[AP] |           |           |
|      |                |                |              |                                       |          |                        |           |           |
| FRI  |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |

**Subjects.** ME 401- Fluid Machinery, ME 402- Primary Manufacturing Process, ME 403- Engineering Materials, ME 404- Mechanisms ,M(ME)401- Numerical Methods, HU 401- Environmental Science, ME 491- Fluid Mechanics & Hydraulic Machines Lab, ME 492- Manufacturing Technology Lab, ME 493- Material Testing Lab, ME 494- Machine Drawing-II, M(ME) 491- Numerical Methods Lab HU481- Technical Report Writing & Language Practice

**Faculty name.** SG-Dr. Sandip Ghosh,AM-Mr.Abhishek Mondal, MRI- Mr. Munshi Rasidul Islam,SM-Mr. Subrata Majumder DS-Mr.Dipak Shaw, DM-Debashis Majumder,PR-Partha Roy,SSR-Subhomay Singha Roy, TP- Mrs.Thia Paul, DM1-Mr.Dhiraj Mondal, AG-Mrs.Adrija Guha

**Routine Coordinator**  
(Prof. P. Biswas)

**HOD**  
(Prof. (Dr.) S. Ghosh)

**Principal**  
(Prof. (Dr.) M. R. Dave)

**JIS College of Engineering**  
**Lecture and Lab schedule for even semester 2017-2018 STREAM/BATCH. ME-2B**  
**B.Tech- 2<sup>nd</sup> Year classes – Room No. 419**

| DAYS | 10 am to 11 am | 11 am to 12 am | 12 pm to 1pm | 1 to 2pm                              | 2 to 3pm | 3 to 4 pm              | 4 to 5 pm | 5 to 6 pm |
|------|----------------|----------------|--------------|---------------------------------------|----------|------------------------|-----------|-----------|
| MON  |                |                |              | B<br><br>R<br><br>E<br><br>A<br><br>K |          | ME 493, Gr.ME2B(2)[AS] |           |           |
| TUE  |                |                |              |                                       |          |                        |           |           |
| WED  |                |                |              |                                       |          | ME 493, Gr.ME2B(1)[AP] |           |           |
| THU  |                |                |              |                                       |          |                        |           |           |
| FRI  |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |
|      |                |                |              |                                       |          |                        |           |           |

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Faculty name: SG-Dr. Sandip Ghosh,PB-Mr.Palash Biswas,AP-Mr.Arijit Patra, TP-Mrs.Thia Paul, MRI- Mr. Munshi Rasidul Islam, DS- Mr. Dipak Shaw DM-Debashis Majumder, PR-Partha Roy,SSR-Subhomay Singha Roy,TS-Mr.Tanmoy Sarkar, TP- Mrs.Thia Paul, DM1-Mr.Dhiraj Mondal, Mrs.Adrija Guha

**Routine Coordinator**  
**(Prof. P. Biswas)**

**HOD**  
**(Prof. (Dr.) S. Ghosh)**

**Principal**  
**(Prof. (Dr.) M. R. Dave)**

**Name of the Course:** Material testing Lab

**Course Code:** ME 493

**Prerequisites:** Knowledge of Material Science, Basic Sciences.

**Course Objectives:** To test several properties of material like ductility, surface roughness, malleability, hardenability etc.

**Course Outcomes:**

Upon the completion of the course the student would be able to

**ME493.1.** Determine toughness value of industrial specimens.

**ME493.2.** Analyze various heat treatment methods for a given specimen to observe mechanical properties and grain size.

**ME493.3.** Find surface or subsurface defects relevant to almost all manufacturing industries.

**ME493.4.** Evaluate the mechanical properties like drawability, endurance limit of a steel specimen necessary for material selection in design and development.

**Course Articulation Matrix:**

| CO Codes    | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO10 | PO11 | PO12 | PSO 1 | PSO 2 | PSO 3 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| ME493<br>.1 | 2    | -    | 2    | -    | 1    | -    | -    | -    | 2    | 1    | -    | 1    | 1     | -     | 1     |
| ME493<br>.2 | 3    | -    | 2    | 1    | 2    | -    | -    | -    | 3    | 1    | 2    | 1    | 3     | -     | 2     |
| ME493<br>.3 | 2    | -    | 2    | 1    | 1    | -    | -    | -    | 1    | 1    | 1    | 1    | -     | -     | 3     |
| ME493<br>.4 | 2    | -    | 3    | 1    | 2    | 1    | 1    | -    | 2    | 1    | 2    | 2    | -     | -     | 2     |
| Avg.        | 2.2  | -    | 2.2  | 1    | 2.2  | 1    | 1    | -    | 2    | 1    | 1.5  | 1.3  | 2     | -     | 2     |

## Apparatus Details.



### FATIGUE TESTING MACHINE

MANUFACTURED BY. ASI SALES PVT. LTD



## DYE PENETRATION TEST KIT

MANUFACTURED BY: NONDESTRUCTIVE TEST APPLIANCES PVT.LTD



## Cloth polishing Machining

MANUFACTURED BY:



## Belt Grinder Machine

MANUFACTURED BY.



Metallographic Microscope



Specimen Mounting Press



Muffle Furnace



Jomney and Quenching Apparatus



Ultrasonic Flaw Detector