BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus

**INSTRUCTION DIVISION**

**FIRST SEMESTER 2015-2016**

**Course Handout (Part-II)**

Date: 03/08/2015

***Course No.*** : **ME F215/MF F215**

***Course Title*** : **MECHANICAL ENGINEERING LABORATORY**

***Instructor-in-charge*** : **ARUN KUMAR JALAN**

***Instructor*** : Abhijit K Digalwar, Jitendra S Rathore, Srinivas Kota, Neetu Malik, Shivani Nain, Neha Arora, Paridhi puri, Tamalika Bhakat,

**Scope and objective of the course:**

The objective of the course is to train the students in the skill of operation of instruments and equipments related to mechanical engineering, Course will mainly focus on testing of mechanical properties like tensile testing, hardness, impact, bending of beams. Basic fluid mechanics experiments like measurements of pressure, temperature, viscosity, flow measurement, basic electrical & electronics engineering like experiments on power measurements, transformers, induction motors. LVDT Transducers, logic gates etc. This course will also expose the students to a broad knowledge of experimental methods and measurement techniques.

**Laboratory Manual (LM):** "A Laboratory Manual for MECHANICAL ENGINEERING LABORATORY (Enlarge and Edited Version of Measurement Techniques-II: TA C 222)", Digalwar, A. K. et al., EDD Notes.

**Reference Books:**

R1: Holman J.P., "Experimental Methods for Engineers," TATA McGRAW HILL, 7th ed., 2004.

**R2:** Modi P.N. and S.M Seth, "Hydraulics and Fluid Mechanics," Standard Publishers, 12th ed. 1998.

**Laboratory Plan:**

| Exp. No. | Name of Experiment | Ref |
|---|---|---|
| MEL1 | Determine the modulus of elasticity of mild steel specimen using tensile test | LM: ME1 |
| MEL2 | Determine the modulus of elasticity of mild steel specimen using bending test. | LM: ME2 |
| MEL 3 | Vicker's Hardness Testing Machine and correlate them with the Ultimate Tensile Strength (UTS) of the materials | LM: ME6 |
| MEL 4 | Verification of Bernoulli's theorem | LM: CH5 |

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|---|---|---|
| MEL 5 | Study of logic gates and combinations | LM: EEE 1 |
| MEL 6 | Hardware familiarity, component study and operational amplifier circuits | LM: EEE 3 |
| MEL 7 | Perform compression test on UTM | LM: ME 3 |
| MEL 8 | Measurement of hardness of the given samples using Brinell Hardness Testing Machine and correlate them with the ultimate Tensile Strength(UTS) of the Materials | LM: ME 4 |
| MEL9 | To estimate and compare the shock resistance qualities of the materials by conducting Impact Test | LM: ME 7 |
| MEL10 | Study of Viscosity Coefficient | LM: CH 2 |
| MEL11 | Test on single phase induction motor | LM: EEE 2 |
| MEL12 | Determination of sensitivity of LVDT transducer | LM: EEE 6 |
| MEL13 | Measurement of hardness of the given samples using Rockwell Hardness Testing Machine | LM: ME 5 |
| MEL14 | Perform Torsion test to find angle of twist | LM: ME 5 |
| MEL15 | Study of Fatigue Testing Machine | Class notes |
| MEL 16 | Study of Reynold's apparatus | LM: CH 3 |
| MEL 17 | Measurement of electrical variables in single phase circuit | LM: EEE 4 |
| MEL 18 | Test on single phase transformer | LM: EEE 6 |

**Laboratory Location :** Material testing laboratory

**Lab Cycle Details:**

Lab Cycle I : Exp No MEL 1 to MEL 6
Lab Cycle II : Exp No MEL 7 to MEL12
Lab Cycle III : Exp No MEL 13 to MEL 18

**Evaluation Scheme:**

| Component | Duration | Marks | Weightage (%) | Date & Time | Remarks |
|---|---|---|---|---|---|
| Lab. Expt. 1st cycle | 24 Hr | 30 | 20 | TBA | OB |
| Viva -I | 2 Hr | 9 | 6 | TBA | CB |
| Lab. Expt. 2nd cycle | 24 Hr | 30 | 20 | TBA | OB |
| Viva -II | 2 Hr | 9 | 6 | TBA | CB |
| Lab. Expt. 3rd cycle | 24 Hr | 30 | 20 | TBA | OB |
| Viva -III | 2 Hr | 9 | 6 | TBA | CB |
| Final Lab. Test | 01 Hr | 33 | 22 | TBA | CB |
| **TOTAL** | | **150** | **100** | | |

**Makeup Policy**: Makeup will be granted only for genuine cases:
**Chamber Consultation hours:** Wednesday 3.30 pm to 4.30 pm Chamber no: 2152-C
**Notices:** Notices concerning the course will be displayed only on Mechanical Engineering NB

**Instructor-in-charge**

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