

**GOVERNMENT POLYTECHNIC JAIPUR**

A/ P: Ragadi, Block: Korei, Dist.: Jaipur, Odisha- 755019

Website: <https://www.gpjapur.org> E-mail: principalgpjapur@yahoo.co.in Contact: 9437155107

**DEPARTMENT OF METALLURGICAL ENGINEERING**

**LESSON PLAN**

| Discipline: I<br>Metallurgy  | Semester:<br>4th                  | Name of the Teaching faculty:<br>SUVENDU MUDULI, Lect. in Metallurgy. |
|------------------------------|-----------------------------------|-----------------------------------------------------------------------|
| Subject:<br>Material Testing | No of Days/Week class allotted: 4 | Semester from Date: 16-01-2024 To Date: 26-04-2024<br>No of weeks: 16 |
| Week                         | Class Day                         | Topics                                                                |
| 1st                          | 1st                               | Introduction to MT                                                    |
|                              |                                   |                                                                       |
|                              |                                   |                                                                       |
|                              | 2nd                               | Comparison DT & NDT                                                   |
|                              | 3rd                               | hardness test.                                                        |
|                              | 4th                               | Moh's scale.                                                          |
| 2nd                          | 1st                               | Scratch hardness.                                                     |
|                              | 2nd                               | Brinell test                                                          |
|                              | 3rd                               | Vickers test.                                                         |
|                              | 4th                               | Rockwell test.                                                        |
| 3rd                          | 1st                               | Relation between hardness & strength.                                 |
|                              | 2nd                               | Tensile test.                                                         |
|                              | 3rd                               | Describe UTM.                                                         |
|                              | 4th                               | tensile testing procedure.                                            |
| 4th                          | 1st                               | stress strain example.                                                |
|                              | 2nd                               | % elongation % Reduction in area.                                     |
|                              | 3rd                               | Draw stress-strain diagram.                                           |
|                              | 4th                               | Impact test.                                                          |
|                              | 1st                               | Charpy sample                                                         |
|                              | 2nd                               | Izod sample.                                                          |

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(M.T. P-1)



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|------|-----|---------------------------------------|
| 5th  |     |                                       |
|      | 3rd | Calculation of Impact energy          |
|      | 4th | Impact m/c procedure                  |
| 6th  | 1st | Factors affecting Impact test value   |
|      | 2nd | Critical speed, notch value           |
|      | 3rd | Fatigue test                          |
|      | 4th | Stress cycles diagrams                |
| 7th  | 1st | different amplitude ratio             |
|      | 2nd | Stress ratio, Sinusoidal cycle        |
|      | 3rd | Fatigue test method                   |
|      | 4th | Draw - SN curve                       |
| 8th  | 1st | SN curve for ferrous metals           |
|      | 2nd | SN curve for Nonferrous metals        |
|      | 3rd | Factors affecting Fatigue test        |
|      | 4th | Calculation, problem of Stress cycles |
| 9th  | 1st | Creep test                            |
|      | 2nd | Application of Creep test             |
|      | 3rd | Creep curve                           |
|      | 4th | Stage - 1 of curve describe           |
| 10th | 1st | Stage 2 of curve describe             |
|      | 2nd | Stage - 3 of curve describe           |
|      | 3rd | Creep testing method                  |
|      | 4th | Factors affecting Creep               |
| 11th | 1st | Stress rupture test                   |
|      | 2nd | All diagrams of Creep test methods    |
|      | 3rd | NDT                                   |
|      | 4th | Advantages & examples                 |
| 12th | 1st | Visual test                           |
|      | 2nd | Leakage test                          |
|      | 3rd | Pressure test                         |
|      | 4th | Dye penetrant test                    |
|      | 1st | Different methods of dye appl         |

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|      |     |                                        |
|------|-----|----------------------------------------|
| 13th | 2nd | Appl <sup>n</sup> of liquid penetrant. |
|      |     |                                        |
|      | 3rd | Eddy Current method.                   |
|      | 4th | Appl <sup>n</sup> and method.          |
| 14th | 1st | Magnetic particle test                 |
|      |     |                                        |
|      | 2nd | What is magnaflux.                     |
|      |     |                                        |
|      | 3rd | Flaw detection method.                 |
|      |     |                                        |
|      | 4th | Ultrasonic testing method              |
| 15th | 1st | pulse echo method.                     |
|      | 2nd | Double probe flaw detector.            |
|      | 3rd | Radiography test                       |
|      | 4th | X-Ray                                  |
| 16th | 1st | Gamma-Ray                              |
|      | 2nd | Radiography merits & demerits          |
|      | 3rd | Revision of old chapters.              |
|      | 4th | Revision of old chapters.              |

*Sellu.*  
Lecturer in Metallurgy  
Government Polytechnic,  
JAIPUR

(m.T.P-3)