Lesson Plan

Subject : Metal Forming Technology

Course code :- MEDLO6023

Credits :-3

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| Lecture No. | Topics  |
| 1 | **Introduction to Metal Forming:**Metallurgical aspects of metal forming, slip,  |
| 2 | twinning mechanics of plastic deformation, effects of temperature, strain rate, |
| 3 |  Micro structure and friction in metal forming-yield criteria and their significance, |
| 4 | Classification of Metal Forming Processes, Advantages and Limitations, |
| 5 |  Stress strain relations in elastic and plastic deformation,  |
| 6 | concept of flow stresses,deformation mechanisms |
| 7 |  Hot and Cold Working Processes and Its Effect on Mechanical Properties. |
| 8 | **Rolling:**Introduction and Classification , . |
| 9 | Types of Rolling Mills |
| 10 | Forces andGeometrical Relationships in Rolling, |
| 11 | Calculation of Rolling Load,  |
| 12 | Roll Pass Design,  |
| 13 |  Defects in Rolled Products |
| 14 | **Forging:**Introduction and Classification |
| 15 |  operation and principle of Forging Processes and Equipment, |
| 16 |  Methods of forging, |
| 17 |  Open and Close Die Forging Processes, |
| 18 |  Defects, Structure and Properties of Forged Products. |
| 19 |  Force Analysis in forging |
| 20 | **Extrusion:**Introduction and Classification |
| 21 | Extrusion Equipment |
| 22 | Forces in extrusion |
| 23 | Analysis of Extrusion Process  |
| 24 | Extrusion of components including Seamless Pipes and Tubes.  |
| 25 | Extrusion of pipes by cold working |
| 26 | **Drawing:**Introduction and Classification, |
| 27 |  Wire Drawing,  |
| 28 | Rod Drawing, |
| 29 | Tube Drawing,  |
| 30 |  Deep Drawing |
| Lecture No. | Topics |
| 31 | Analysis of Wire Drawing Process and Load Calculations |
| 32 | **Sheet Metal Forming:**Principle, process parameters,  |
| 33 | equipment and application of the following processes:  |
| 34 | spinning, stretch forming, plate,  |
| 35 | V and edge bending, Curling, Ironing, Roll Bending |
| 36 |  Metal Spinning. Press brake forming, explosive forming  |
| 37 | Hydro forming, electro hydraulic forming |
| 38 |  magnetic pulse forming. High Velocity forming of metals and High energy Rate forming |