# LESSON PLAN

| Subject Name- Theory Metal Cutting | Branch- Production Engineering |
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| Subject Code- BPE 2504 | Semester- 5th |

| S/N | Module | Topic(s) | Period/ Hours |
|---|---|---|---|
| 1 | I | Basic shapes of machine tools | 1 |
| 2 | I | Wedge action, function of different angles of cutting tools | 2 |
| 3 | I | Tool geometry and Nomenclatures ASA,ORS system | 3 |
| 4 | I | Conversion of angles, geometry of twist drill & slab milling cutter | 4 |
| 5 | I | Grinding of single point cutting tool, Tool materials | 5 |
| 6 | I | Tutorial | 6 |
| 7 | I | Mechanism of chip formation: Mode of failure under stress-fracture & yielding mechanism | 7 |
| 8 | I | Types of chips, Factor involved in chip formation, shear plane | 8 |
| 9 | I | Effect of cutting variable on chip reduction coefficient, chip formation in Drilling and milling | 9 |
| 10 | I | Tutorial | 10 |
| 11 | II | Force system in turning- Merchant circle diagram, velocity relationship | 11-12 |
| 12 | II | Stress in conventional shear plane, Energy of cutting process | 13-14 |
| 13 | II | Tutorial | 15 |
| 14 | II | Earnst& Merchant angle relationship | 16-17 |
| 15 | II | Forces in drilling and plane slab milling | 18-19 |
| 16 | II | Measurement of forces-dynamometer for measuring turning & drilling forces | 20-21 |

| S/N | Module | Topic(s) | Period/ Hours |
|---|---|---|---|
| 17 | II | Tutorial | 22 |
| 18 | III | Thermodynamics of chip formation: The shear plane temperature-interference temperature from dimensional analysis-Experimental determination of chip tool interface | 23-27 |
| 19 | III | Tutorial | 28 |
| 20 | III | Coolants- Theory of cutting fluid action at the chip tool interface | 29-30 |
| 21 | III | Techniques for application of cutting fluids | 31 |
| 22 | III | Tutorial | 32 |
| 23 | IV | Tool wear: Criteria of wear | 33 |
| 24 | IV | Machinability and tool life | 34 |
| 25 | IV | Flank wear, Taylor’s tool life equation, Crater wear | 35-36 |
| 26 | IV | Vibration & chatter in machining | 37-38 |
| 27 | IV | Economics of metal machining | 39 |
| 28 | IV | Tutorial | 40 |