

# MAHAMAYA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCE, NUAPADA

LESSON PLAN-4<sup>TH</sup> SEMESTER (2022)

SEMESTER FROM DATE: 10.03.2022 TO 10.06.2022

NUMBER OF WEEKS: 15

SUBJECT - MANUFACTURING TECHNOLOGY (TH-2)

Name of the Faculty- Er. BINAYA BHUSAN PANDA

| CHAPTER /TOPIC    | COURSE TO BE COVERED  | CLASSES REQUIRED | REMARKS (IF ANY) |
|-------------------|---|------------------|------------------|
| <b>Chapter-1</b>  | <b>Tool Materials:</b>  | <b>4</b>         |                  |
| 1.1               | Composition of various tool materials   | 2                |                  |
| 1.1               | Physical properties& uses of such tool materials.   | 2                |                  |
| <b>Chapter -2</b> | <b>Cutting Tools:</b>   | <b>6</b>         |                  |
| 2.1               | Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer  | 2                |                  |
| 2.2               | Turning tool geometry and purpose of tool angle   | 3                |                  |
| 2.3               | Machining process parameters (Speed, feed and depth of cut)   | 1                |                  |
| 2.4               | Coolants and lubricants in machining and purpose  | 1                |                  |
| <b>Chapter-3</b>  | <b>Lathe Machine:</b>   | <b>8</b>         |                  |
| 3.1               | <b>Construction and working of lathe and CNC lathe</b> <ul style="list-style-type: none"> <li>• Major components of a lathe and their function</li> <li>• Operations carried out in a lathe(Turning, thread cutting, taper turning, internal machining, parting off, facing, knurling)</li> <li>• Safety measures during machining</li> </ul> | 2                |                  |
| 3.2               | <b>Capstan lathe</b> <ul style="list-style-type: none"> <li>• Difference with respect to engine lathe</li> <li>• Major components and their function</li> <li>• Define multiple tool holders</li> </ul>   | 2                |                  |
| 3.3               | <b>Turret Lathe</b> <ul style="list-style-type: none"> <li>• Difference with respect to capstan lathe</li> <li>• Major components and their function</li> </ul>   | 2                |                  |
| 3.4               | Draw the tooling layout for preparation of a hexagonal bolt &bush   | 2                |                  |
| <b>Chapter-4</b>  | <b>Shaper:</b>  | <b>6</b>         |                  |
| 4.1               | Potential application areas of a shaper machine   | 1                |                  |
| 4.2               | Major components and their function   | 1                |                  |
| 4.3               | Explain the automatic able feed mechanism   | 1                |                  |
| 4.4               | Explain the construction &working of tool head  | 1                |                  |
| 4.5               | Explain the quick return mechanism through sketch   | 1                |                  |
| 4.6               | State the specification of a shaping machine.   | 1                |                  |
| <b>Chapter-5</b>  | <b>Planning Machine:</b>  | <b>6</b>         |                  |
| 5.1               | Application area of a planer and its difference with respect to shaper  | 1                |                  |
| 5.2               | Major components and their functions  | 1                |                  |
| 5.3               | The table drive mechanism   | 2                |                  |

|  |                   |   |           |  |
|--|-------------------|---|-----------|--|
|  | 5.4               | Working of tool and tool support  | 1         |  |
|  | 5.5               | Clamping of work through sketch.  | 1         |  |
|  | <b>Chapter-6</b>  | <b>Milling Machine:</b>   | <b>08</b> |  |
|  | 6.1               | Types of milling machine and operations performed by them and also same for CNC milling machine   | 1         |  |
|  | 6.2               | Explain work holding attachment   | 1         |  |
|  | 6.3               | Construction & working of simple dividing head, universal dividing head   | 2         |  |
|  | 6.4               | Procedure of simple and compound indexing   | 2         |  |
|  | 6.5               | Illustration of different indexing methods  | 2         |  |
|  | <b>Chapter-7</b>  | <b>Slotter</b>  | <b>6</b>  |  |
|  | 7.1               | Major components and their function   | 2         |  |
|  | 7.2               | Construction and working of slotter machine   | 2         |  |
|  | 7.3               | Tools used in slotter   | 2         |  |
|  | <b>Chapter-8</b>  | <b>Grinding</b>   | <b>6</b>  |  |
|  | 8.1               | Significance of grinding operations   | 1         |  |
|  | 8.2               | Manufacturing of grinding wheels  | 2         |  |
|  | 8.3               | Criteria for selecting of grinding wheels   | 1         |  |
|  | 8.4               | Specification of grinding wheels with example Working of <ul style="list-style-type: none"> <li>• Cylindrical Grinder</li> <li>• Surface Grinder</li> <li>• Centreless Grinder</li> </ul> | 2         |  |
|  | <b>Chapter-9</b>  | <b>Internal Machining operations</b>  | <b>6</b>  |  |
|  |                   | Classification of drilling machines   |           |  |
|  | 9.1               | Working of <ul style="list-style-type: none"> <li>• Bench drilling machine</li> <li>• Pillar drilling machine</li> <li>• Radial drilling machine</li> </ul>                               | 2         |  |
|  | 9.2               | <b>Boring</b> <ul style="list-style-type: none"> <li>• Basic Principle of Boring</li> <li>• Different between Boring and drilling</li> </ul>  | 2         |  |
|  | 9.3               | <b>Broaching</b> <ul style="list-style-type: none"> <li>• Types of Broaching(pull type, push type)</li> <li>• Advantages of Broaching and applications</li> </ul>                         | 2         |  |
|  | <b>Chapter-10</b> | <b>Surface finish, lapping</b>  | <b>4</b>  |  |
|  | 10.1              | Definition of Surface finish  | 2         |  |
|  | 10.2              | Description of lapping& explain their specific cutting.   | 2         |  |