



Subject Code: 01ME2303

Subject Name: Manufacturing Process - I

B. Tech. Year - II (Semester - 3)

Type of course : Engineering Science

Prerequisite : Knowledge of Workshop

Rationale : Understanding of basic application of machine tools for metal removing processes.

Course Outcome :

After completion of this course, student will be able to

1. Understand the characteristics of different machine tools.
2. Compare among the different machine tools.
3. Select machine tools according to requirements.
4. Analyze any conventional machining operations.
5. Develop the sequence of machining operation to produce the end product.

Teaching and Examination Scheme :

Teaching Scheme			Credits C	Examination Marks					Total Marks
THEORY	TUTORIAL	PRACTICAL		Theory Marks			Practical Marks		
				ESE(E)	IA	CSE	Viva (V)	Term Work (TW)	
0	0	4	2	50	30	20	25	25	150

Content :

Sr. No.	Content	Total Hrs.
1	LATHE: <ol style="list-style-type: none"> 1. Introduction – Types of Machines, Various components, its functions, working principle 2. Tooling – Attachments and accessories, its functions, working principle 3. Operation – Various Operations, tools, preparation required for operations 4. Selection and Specification – Specification, Quotations, detailing and analysis 5. Economy – Calculations like MRR/Cutting Rate, Time etc. 	14
2	MILLING : <ol style="list-style-type: none"> 1. Introduction – Types of Machines, Various components, its functions, working principle 2. Tooling – Attachments and accessories, its functions, working principle 3. Operation – Various Operations, tools, preparation required for operations 	14

	<p>4. Selection and Specification – Specification, Quotations, detailing and analysis</p> <p>5. Economy – Calculations like MRR/Cutting Rate, Time etc.</p>	
3	<p>SHAPER :</p> <p>1. Introduction – Types of Machines, Various components, its functions, working principle</p> <p>2. Tooling – Attachments and accessories, its functions, working principle</p> <p>3. Operation – Various Operations, tools, preparation required for operations</p> <p>4. Selection and Specification – Specification, Quotations, detailing and analysis</p> <p>5. Economy – Calculations like MRR/Cutting Rate, Time etc.</p>	08
4	<p>DRILLING :</p> <p>1. Introduction – Types of Machines, Various components, its functions, working principle</p> <p>2. Tooling – Attachments and accessories, its functions, working principle</p> <p>3. Operation – Various Operations, tools, preparation required for operations</p> <p>4. Selection and Specification – Specification, Quotations, detailing and analysis</p> <p>5. Economy – Calculations like MRR/Cutting Rate, Time etc.</p>	08
5	<p>GRINDING:</p> <p>1. Introduction – Types of Machines, Various components, its functions, working principle</p> <p>2. Tooling – Attachments and accessories, its functions, working principle</p> <p>3. Operation – Various Operations, tools, preparation required for operations</p> <p>4. Selection and Specification – Specification, Quotations, detailing and analysis</p> <p>5. Economy – Calculations like MRR/Cutting Rate, Time etc.</p>	10

Distribution of Theory Marks

R Level	U Level	A Level	N Level	E` Level	C Level
20	30	25	15	10	--

Legends: R: Remember; **U:** Understand; **A:** Apply; **N:** Analyze; **E:** Evaluate; **C:** Create

List of Experiments :

1. Prepare the given job as per the drawing using Lathe Machine.
2. Prepare the given job as per the drawing using Milling Machine.
3. Prepare the given job as per the drawing using Shaper Machine.
4. Prepare the given job as per the drawing using Grinding Machine.
5. Prepare the given job as per the drawing using Drilling Machine.
6. Dismantle & mantle the Indexing Attachment.
7. Dismantle & mantle the Head Stock Attachment.

8. Dismantle & mantle the carriage assembly.
9. Dismantle & mantle the Tail Stock Attachment.
10. Dismantle & mantle the Rack Cutting Attachment.
11. Dismantle & mantle the Slotting Attachment.
12. Remove and attach the sub assembly on a given machine.

Reference books :

1. Workshop Technology Vol. I, II & III, WAJ Chapman.
2. Elements of Workshop Technology Vol. II, Hajra Choudhuri.
3. Production Technology, R. K. Jain.
4. Production Technology - H.M.T.
5. Workshop Technology Vol. II by Raghuvanshi, Dhanpat Rai Publication

Major Equipment :

1. Lathe Machine
2. Milling Machine
3. Shaper Machine
4. Drilling Machine
5. Grinding Machine

List of Open Base Software / learning website :

1. <http://nptel.iitm.ac.in>,
2. <https://swayam.gov.in> - Manufacturing Processes and Technology
3. <https://www.youtube.com/playlist?list=PL82E9A8429ED7BB27>