ME183: Manufacturing Processes

Teaching Scheme			Credits	Marks Distribution				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	5	70	30	30	20	150

Course Content:

Sr. No.	Topics	Teaching Hrs.
1	**Basic Machine Tools and Metal Cutting Principles:** Classification of machining processes and machine tools, Basic motions in various machines tools, Cutting tool materials, Different types of cutting tools, Nomenclature of single point and multi point cutting tools, Concept of cutting speed, feed, depth of cut and MRR for various machine tools under consideration.	05
2	**Metal Cutting Lathes:** Classification of lathes, Constructional details/elements of engine lathe, Accessories and attachments, Specifications, Lathe operations, Methods of taper turning, Thread cutting on lathe.	10
3	**Drilling Machines:** Fundamentals of drilling operation, Construction of drilling machines, Types of drilling machines, Twist drill geometry, and Allied operations performed on drilling machine.	05
4	**Boring Machine:** Purpose of boring operation, Horizontal and vertical boring machines, Jig boring machines.	02
5	**Milling Machines:** Principle of milling, Concept of up-milling and down-milling, Types of milling machines, Construction details of column and knee type milling machine, Types of milling cutters, Different types of milling operations, Cutting conditions in milling, Accessories and attachments, Indexing, Helical milling operation and its set up.	10
6	**Shaper, Planer, and Slotter:** Shaper: Working principle, Classification of shapers, Principal parts of shaper, Shaper mechanisms, and Shaper operations. Planer: Working principle, Difference between shaper and planer. Slotter: Principal parts, Operations performed on slotter.	05

7 **Grinding Machines and Abrasives:** 05

Characteristic of grinding process, Classification of grinding machines, Operations and applications of surface, cylindrical and centerless grinding processes, Dressing, truing and balancing of grinding wheels, Abrasives, Grinding wheel designation and selection.

8 **Broaching and Sawing Machines:** 03

Broaching: Fundamentals of broaching, broaching tool terminology, Types of broaching machines, Advantages and limitations of broaching.

Sawing: Operation, Saw blades, Types of sawing machines.

Total Hrs. 45

Reference Books:

1. Rao P.N., "*Manufacturing Technology (Vol. 2)*", Tata McGraw-Hill.
2. Hajra Choudhury S. K., Bose H. K. and Hajra Choudhury A. K., "*Elements of Workshop Technology (Vol. II)*", 12th Edition, Media promoters and Publishers Pvt. Ltd.
3. Raghuwanshi B. S., "*A Course in Workshop Technology (Machine Tools Vol. II)*", Dhanpat Rai & Sons.
4. Khanna O.P and Lal M., "*A Text book of Production Technology (Vol. II*)", Dhanpat Rai Publications (P) ltd.
5. HMT, "*Production Technology*", Tata McGraw-Hill.
6. Chapman W.A.J., "*Workshop Technology (Vol. I, II & III*)".
7. Jain R. K., "*Production Technology*".