

GUJARAT TECHNOLOGICAL UNIVERSITY

MANUFACTURING ENGINEERING

B. E. SEMESTER: III

Subject Name: **Basic Manufacturing Processes**

Subject Code: **133404**

Sr. No	Course Content
1.	<p>Lathe</p> <p>Introduction to production processes – Types of production – Production processes – Casting – Forming – Machining and Welding – Machine – Machine tool – Lathe – Engine lathe – Block diagram – Sketch – Functions of each part – Work holding devices in lathe – Functions – Chuck, Centre – Dogs – Steady Rest and Follower Rest – mechanism of lathe – Apron – Feed – Tumbler Gear – various operations performed in Lathe – Facing – Turning – Chamfering and knurling – Relative positions of tool and job – Taper turning operations – Thread cutting – Thread – RH and LH – Single start and multi start with application – Method of thread cutting – Selection and arrangement of tool and work – Problems in metric and inch thread conversion – Specifications of Lathe – Burnishing</p>
2.	<p>Shaper, Planer & Slotter</p> <p>Purpose of shaping – Block diagram – Functions of each part – Purpose of planer – Block diagram – Functions of each part – Purpose of slotting machine – Block diagram – Functions and working principle – Operations carried out – Horizontal plane – Vertical plane – V type with relative position – Comparison of planer with shaper – Work holding devices in shaper and planer – Quick return mechanism in shaper – Mechanical and hydraulic – Cross feed mechanism –Types of planer with application – Mechanism in planer – Comparison of shaping with slotting – Tool holding devices in shaper – Planer – Slotter – Simple problems to calculate the velocity – Speed – Feed – Depth of cut.</p>
3.	<p>Drilling</p> <p>Purpose of drilling – Block diagram and function – Types of drilling machines – Portable drilling – Bench type – Sensitive drilling – Radial arm drilling – Functions of parts – Purpose and operation – Gang milling – Multiple drill head – Upright drilling – Relative operations – Reaming – Boring, tapping – Counter boring – Courses sinking – Trepanning and spot facing – Work holding devices – specification torque calculation – Speed – Feed – Depth of cut.</p>

4.	Milling Milling machine purpose – Up and Down milling – Classification of milling machines – Slot – Keyway machining – Methods of milling – Single piece – String – Rotary – Index – Gang, progressive – Copy – Horizontal milling machine – Block diagram – Functions of each part – Applications – Vertical milling machine – Block diagram – Functions of each part applications – Gear cutting using milling machine – Procedure with neat sketch – Milling cutters – Peripheral – Face – End T slot – Attachments and special accessories for milling – Rotary – Slotting attachment – Indexing mechanism – Methods of indexing – Direct – Plain – Compound – Differential indexing – Problems – Specifications – Cutting conditions and parameters.
5.	Grinding Purpose – Classification – Surface finish – Applications – Grinding wheel – Types – Specifications – Selection – Surface grinding machine – Block diagram – Functions of each part – Cylindrical grinding – Centre-less grinding – Comparison – in feed – end feed and through feed – Balancing – Dressing – Loading and Truing of wheel – Special grinding machines – Specification of machine – Cutting condition.

Text Books:

1. HMT Bangalore, “Production Technology”, Tata Mc-Graw Hill Publishing Company Limited, 2001.
2. Sharma, P.C., “A Text Book of Production Technology”, S.Chand and Company, 2001.

Reference Books:

1. Jain, R.K., “Production Technology”, Khanna Publishers, 2001.
2. Hajra Choudhary et al, “Elements of Production Technology –Vol. II”, Asia Publishing House, 2000.
3. Kumar, B., “Manufacturing Technology”, Khanna Publishers, 2000.