

III Year B.Tech. Mechanical Engg. I - Semester	L	T	P	To	C
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ME321 MANUFACTURING PROCESS - II

Course Description & Objectives:

To expose students to the metal removal principles and its processes. To acquire deep knowledge of single point and multi point cutting tool geometry and its performance. With the help of various cutting tools and accessories development of various machine tools knowledge is imparted.

Course Outcomes:

1. Complete knowledge of tool geometry and its performance.
2. Force and power requirement calculations for various machining operations.
3. Lathe machine and its operations exposure.
4. Plain surfaces machining by shaper and planer machine.
5. Drilling and milling operations familiarity.
6. Super finishing process and its applications.

UNIT - I Introduction:

Principles and Elements of machining - Types of cutting tools – Geometry of single point cutting tool – chip formation and types of chips, chip breakers. Orthogonal and Oblique cutting – Machinability - Merchant's force diagram – velocity relationship – cutting speed, feed, depth of cut. Tool life and wear – Tool materials.

UNIT - II Lathe:

Classification - line diagram of lathe – Lathe Parts – Lathe specifications.
Work Holding Devices : Three jaw chuck – Four jaw chuck – combination chuck and other work holding devices. Tool holders.
Lathe Operations : Turning, facing – taper turning – thread cutting.
Capstan & Turret Lathe : Differences, collet chuck, tool holders, tool layout.

UNIT - III Shaper:

Line diagram and parts, specifications, quick return mechanism for shapers – work holding devices and shaper operations.
Planer : Types of planers, specifications, quick return mechanism of a planer – work holding devices.
Slotting Machine : Line diagram and parts of a slotter – specifications – Ram drive mechanism.

UNIT - IV Drilling Machine:

Classification and Specifications – Drill bits – twist drill – nomenclature – Tool Holding devices – Drilling operations. Special purpose machines.

Milling Machine : Classification of Milling Machines – Parts and Specifications – types of milling cutters – Milling Operations – Indexing heads – plain and universal dividing heads.

UNIT - V Grinding:

Cylindrical - external and internal, surface and centerless grinding machines.

Grinding Wheel : Specifications - Abrasives, bonds, grit, grade and structure of grinding wheel.

Fine Finishing Processes : Lapping, Honing and superfinishing operations.

TEXT BOOKS :

1. S.K.Hajra Chowdary “Workshop Technology”, Vol-II, 15th ed., Media Publishers, 2012.
2. B.S. Raghu Vamsi, “A Course in Workshop Technology”, Vol-II, 2nd ed., Dhanapathi Rai & Sons, 2013.

REFERENCE BOOKS :

1. Hindustan Machin Tools, “Production Technology”, 3rd ed., Tata McGrawHill, 2014.
2. R.K. Jain and S.C. Gupta, “Production Technology”, 17th ed., Kanna Publishers, 2011.