

4036 - MANUFACTURING PROCESS - II									
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)				
Lectures	Practical	Credits			Theory		Practical Ex.	Total	
2	4	6	25	50	3 Hrs.	100	-	175	
Pre-requisite		Source	Semester	Theory	Test	Total	TW	PR	Gr Total
2004		MEC		75	25	100	50	-	150

RATIONALE:- As a technician the knowledge the knowledge and practical skill in different engineering processes is essential and hence enough weightage is given in this subject towards skill development. Further the technician should be able cater to handling of equipment, tools and accessories and also the safety aspect of man, machine and tools towards which the contents of this course are oriented.

COMPETENCIES TO BE DEVELOPED: The student should be able to understand and apply the various principles involved in machining operation. 2) The student should be able to use the appropriate turning machine tools and accessories depending on the process/operation involved under the given circumstances. 3) The student should be able to choose and apply the appropriate finishing/super-finishing process for the given product depending on the given condition s of the product required. 4) The student should be able to apply the correct press operation and tools for the given product under consideration. 5) The student should be able to apply the correct process and tools for shaping and slotting operations depending on the type of product under the desired conditions. 6) The student be able to apply the appropriate process and tools for milling operations required to be carried out on the given product in the circumstances given.

COURSE CONTENTS	Hrs	Mks
1. FUNDAMENTAL S OF MACHINING	4	12
Introduction to metal cutting, Types of cutting tools, Orthogonal and oblique cutting, Types of chips, Chip breakers, Cutting tool materials, Characteristics of materials, Types of materials, Cutting fluids, Functions, properties, Types.		
2. METAL TURNING:	7	25
Introduction to Lathes, Types of lathes, Specification of centre lathe Accessories, Lathe centres, Carries, catch plates and face plates, Chucks, Mandrels, Rests, Taper Turning Method Eccentric turning, Cutting Tools, Forged tools, Brazed tipped tools, Mechanical fastened tipped tools, Solid tools, Tools Bits and Tools holders, introduction to CNC Turning		
3. FINISHING AND SUPER-FINISHING :	6	18
Grinding, Kinds of Grinding, Grinding machine types, Centreless Grinding, Work holding devices and attachments, Types of abrasives, bonds and bonding process, Grit, Grade and structure of wheels, wheel shapes and sizes, Marking system of wheels, Selection of grinding wheels, Mounting of grinding wheels Glazing and loading of wheels, Dressing and truing of wheels Balancing of wheels, Lapping, Honing, Super finishing, polishing Buffing, Pickling and Oxidising, electroplating, Galvanising, Metal spraying, Painting.		
4. PRESS WORK:	4	12
Introduction, Types of presses, power press parts, power press driving mechanism, Press tools, Methods of Punch support, methods of die support, Die accessories, Types of dies and operation.		
5. SHAPING AND SLOTTING:	4	12
Introduction to shapers, Types of shapers, Principal parts of a standard shaper, Shaper drive mechanism, Shaper feed mechanism, Work holding devices on shaper, Shaper operations, introduction to slotter, Types of slotting machines Slotting machines parts, Slotter drive mechanisms, Slotter operations.		
6. MILLING MACHINES	4	12
Types of milling machines, Principal parts of column and knee type milling machine, Milling machine attachments, Milling cutters and operations.		

7. DRILLING MACHINES:

Types of drilling machines, principal parts of an upright drilling machines and radial drilling machine, Work holding devices, Tool holding devices, Drilling operations, Types of drill bits

Toatl	32	100
-------	----	-----

TERM WORK:

1. One job lathe operations involving external and internal V-threading.
2. Any one of the following jobs : One job in internal and external taper turning on a lathe.
b) One job in special welding process. C) One composite job involving milling, Shaping and drilling. d) One job in external and internal square threading.
3. Demonstration on CNC programming for a sample turning jobs.

REFERENCE BOOKS

1. Workshop Technology - Vol. II by S.K. and A. K. hajra Choudhary
2. Workshop Technology - Vol. II & III by W.A.J. Chapan
3. Workshop Technology - Vol. II by B.S. Raghuvanshi.
4. Workshop Technology - Vol. II by Kaushik Gupta.

