

Discipline: Mechanical Engg.	Semester:4 th	Name of the Teaching Faculty: ANUP RANA Designation: Lecturer S-1	
Subject: Tool Engineering (Th.5) B	No. of days/week class allotted:03	Semester From date: 22.12.2025	To date: 18.04.2026 No. of weeks: 15
Week	Class Day	Theory/Practical Topics	
1 ST	U 1 st	Mechanics of Metal cutting	
	2 nd	Requirements of tools, cutting forces	
	3 rd	Types of chips, chip thickness ratio	
2 ND	1 st	Shear angle, simple numerical only, types of metal cutting process	
	2 nd		
	3 rd	Orthogonal, oblique and form cutting	
3 RD	1 st	Cutting fluids: types; characteristics and applications	
	2 nd	Tool wear:	
	3 rd	Types of wear	
4 TH	1 st	Tool life; Tool life equations	
	U 2 nd	Machinability: definition;	
	3 rd	factors affecting machinability	
5 TH	1 st	machinability index.	
	2 nd	Tool materials: Types; characteristics; applications;	
	3 rd		
6 TH	1 st	Heat treatment of tool steels;	
	2 nd	Specification of carbide tips; Types of ceramic coatings.	
	3 rd		
7 TH	1 st	Cutting Tool Geometry: Single point cutting tool; drills; reamers; milling; cutters	
	2 nd		
	U 3 rd	Types of dies and construction:	
8 TH	1 st	Simple Die; Compound Die;	
	2 nd	Progressive Die; Combination Die.	
	3 rd	Punch & Die mountings: pilots; strippers	
9 th	1 st	Misfeed detectors; Pressure Pads	
	2 nd	Knock outs; stock guide	
	3 rd	Feed-Stop; guide bush; guide pins	
10 TH	1 st	Die Operations; blanking	
	U 2 nd		
	3 rd	piercing; shearing; cropping	
11 TH	1 st	notching; lancing; coining	
	2 nd	embossing; stamping; curling	
	3 rd	drawing; bending; forming	
12 th	1 st	Die set; Die shoe; Die area	
	2 nd	Calculation of clearances on die and punch for blanking and piercing dies;	
	3 rd	Strip layout	

13 TH	1 ST	Calculation of material utilization factor
	2 ND	Bending methods; Bending Dies; bend allowance
	U 3 rd	spring back; spanking; bending pressure; pressure pads;
14 th	1 st	development of blank length. Drawing: operations; Metal flow during drawing;
		Calculation of Drawing blank size; variables affecting metal flow during drawing;
	2 nd	single action and double action dies; combination dies.
	3 rd	Constructional features of - Pressure Die casting dies
15 th	1 st	metal extrusion dies; injection molding dies; forging dies; plastic extrusion dies.
	2 nd	Calculation of material utilization factor
	3 rd	REVISION
TOTAL NO. OF CLASSES=45		

Prepared By:


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Checked by


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Approved by


20/12/25

Academic Coordinator
Govt. Polytechnic, Sonepur