GANAPATI INSTITUTE OF ENGINEERING & TECHONOLOGY (POLYTECHNIC)JAGATPUR,CUTTACK

DEPARTMENT OF MECHANICAL ENGINERING.

LESSON PLAN-2026(SUMMER)

Discipline : Mechanical Engineering	Semester:4th	Name of the Teaching Faculty:- TIMASWAR MALIK
Subject: TOOL ENGINEERING(TE) [MEPE-204 TH-5]	No. of Days/per week class allotted:03	Semester From Date : 22.12.2025 To Dates:-18.04.2026 No. of Weeks:15
Week	**Class Day**	**Theory Topics**
1ST	1st	Unit:1:- Metal Cutting: Mechanics of Metal cutting; requirements of tools; cutting forces
	2nd	types of chips; chip thickness ratio; shear angle
	3rd	shear angle ; simple numerical only, ; types of metal cutting process
2ND	1st	or- thogonal , oblique and form cutting
	2nd	Cutting fluids: Types
	3rd	Characteristics & applications.
3RD	1st	Unit:-2 Tool wear & : Types of wear
	2nd	Tool life.
	3rd	Tool life equations.
4TH	1st	Machinability: definition.
	2nd	factors affecting machinability.
	3rd	machinability index.
5TH	1st	Tool materials,
	2nd	Types; characteristics
	3rd	applications
6TH	1st	Heat treatment of tool steels; Specification of carbide tips.
	2nd	Types of ceramic coatings, ;Cutting Tool Geometry.
	3rd	Single point cutting tool, drills, milling; cutters.
7TH	1st	Unit:-3 Types of dies and construction
	2nd	Simple Die, Compound Die, Progressive Die,
	3rd	Combination Die, Punch & Die mountings, ; pilots ; strippers
8TH	1st	Class Test
	2nd	pilots , strippers, misfeed detectors ,Pressure Pads
	3rd	Knock outs, stock guide

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	2nd	guide bush
	3rd	guide pins.
10TH	1st	Unit:-4 Die Design Fundamentals
	2nd	Die Operations, blanking, piercing
	3rd	shearing; cropping, notching ,
11TH	1st	Lancing, coining
	2nd	Embossing, stamping, curling; drawing;
	3rd	bending; forming, Die set, Die shoe, Die area
12TH	1st	Calculation of clearances on die and punch for blanking and piercing dies,
	2nd	Strip layout,
	3rd	Calculation of material utilization factor
13TH	1st	Unit:-5 Forming Dies: Bending methods, Bending Dies
	2nd	bend allowance, spring back; spanking; bending pressure;
	3rd	pressure pads, development of blank length. Drawing: operations;
14TH	1st	Metal flow during drawing.
	2nd	Calculation of Drawing blank size; variables affecting metal flow during drawing
	3rd	single action and double action dies, combination dies.
15TH	1st	Fundamentals of other Tools:
	2nd	Constructional features of - Pressure Die casting dies
	3rd	metal extrusion dies; injection molding dies, forging dies, plastic extrusion dies.

REFERENCES:

1. Tool Design - Donaldson Anglin, Tata McGraw Hill.
2. Production Technology- H.M.T.Jain, Tata McGraw Hill.
3. A Text Book of Production engineering – P.C. Sharma, S.Chand & Co.
4. Production Technology, R.K.Jain, Khanna Publishers.

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