

C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2025-2026)

Discipline: Mechanical Engineering	Semester: 4th Semester, Summer/2026	Name of the Faculty: Mr. Chandan Saurav Sahoo, Email ID: chandan.sahoo@cvrp.edu.in
Subject: Tool Engineering Theory- 05 b (MEPE204)	No. of Days/week: 03	Start Date: 22/12/2025 End Date: 18/04/2026

Week	Class Day	Theory Topics
1st	1st	Introduction to the Subject. Metal Cutting: Mechanics of Metal cutting;
	2nd	requirements of tools; cutting forces;
	3rd	types of chips; chip thickness ratio; shear angle ; simple numerical only;
2nd	1st	types of chips; chip thickness ratio; shear angle ; simple numerical only;
	2nd	types of metal cutting process; or-thogonal; oblique and form cutting;
	3rd	types of metal cutting process; or-thogonal; oblique and form cutting;
3rd	1st	Cutting fluids: types; characteristics and applications
	2nd	Tool wear: Types of wear;
	3rd	Tool life; Tool life equations
4th	1st	Tool life; Tool life equations
	2nd	Machinability: definition;
	3rd	Factors affecting machinability; machinability index.
5th	1st	Tool materials: Types;
	2nd	characteristics; applications of Tool Material
	3rd	Heat treatment of tool steels
6th	1st	Specification of carbide tips;
	2nd	Types of ceramic coatings
	3rd	Cutting Tool Geometry of Single point cutting tool;
7th	1st	Cutting Tool Geometry of drills; reamers; milling; cutters.
	2nd	Types of dies
	3rd	construction of Simple Die, Compound Die
8th	1st	Construction of Progressive Die, Combination Die.
	2nd	Punch & Die mountings: pilots

P1/2

	3rd	Punch & Die mountings: strippers
9th	1st	misfeed detectors; Pressure Pads
	2nd	misfeed detectors; Knock outs
	3rd	misfeed detectors; stock guide
10th	1st	misfeed detectors; Feed-Stop; guide bush; guide pins.
	2nd	Die Design Fundamentals: Die Operations;
	3rd	Die Design: blanking; piercing;
11th	1st	Die Design: shearing; cropping
	2nd	Die Design: notching; lancing
	3rd	Die Design: coining; embossing
12th	1st	Die Design: stamping; curling
	2nd	Die Design: drawing; bending
	3rd	Die Design: forming; Die set; Die shoe; Die area;
13th	1st	Die Design: Calculation of clearances on die and punch for blanking and piercing dies;
	2nd	Die Design: Strip layout; Calculation of material utilization factor.
	3rd	Forming Dies:Bending methods; Bending Dies
14th	1st	Forming Dies:bend allowance; spring back; spanking;
	2nd	Forming Dies:bending pressure; pressure pads; development of blank length.
	3rd	Drawing: operations; Metal flow during drawing;
15th	1st	Drawing: Calculation of Drawing blank size. variables affecting metal flow during drawing;
	2nd	Single action and double action dies; combination dies.
	3rd	Constructional features of - Pressure Die casting dies; metal extrusion dies; injection molding dies; forging dies; plastic extrusion dies.
	4 th	Revision

Chandan Lawrence Sahoo
Signature of Faculty


Signature of H.O.D.