Ramgarhia Polytechnic College, Phagwara

Mechanical Engineering Department

Head of Department:	Er. Gaurav Kumar
Name of the Faculty:	Er. Anil kumar
Discipline:	Mechanical Engineering Department
Semester:	5th
Subject:	MECHANICAL ENGINEERING DRAWING-I
Lesson Plan Duration:	16 Weeks

RATIONALE

Diploma holders in Mechanical Engineering are required to interpret drawings and therefore it is essential that they have skills of preparing drawings and sketches of mechanical components. This subject aims at development of drawing skills in the students.

Learning Outcomes

After undergoing this course, the students will be able to:

C01. Interpret different limits and fits of components

CO2. Draw intersection of cylinders and their profile

CO3. Draw different kind of machine components like bearings, brackets, pulleys, pipe joints and lathe tool holder.

CO4. Draw electrical circuit diagram of simple household electrical circuits and home appliances

CO5. Read and interpret drawings of mechanical components

PO ⇨ / CO ⇩	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1							
CO2							
CO3							
CO4							
CO5							

Syllabus

Units	Details	Sheets
1.	1. Limits and fits Maximum limit of size, minimum limit of size, tolerance, allowance, deviation, upper deviation, lower deviation, fundamental deviation, clearance, maximum clearance, minimum clearance. Fits – clearance fit, interference fit, transition fit. Hole basis system, shaft basis system, tolerance grades, calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like H7/g6, H7/m6, H8/p6. Basic terminology and symbols of geometrical dimensioning and tolerances.	(03 sheets)
2.	2. Intersection of following solids:- (a) Cylinder with cylinder (equal and different diameters; axis at right angels) (b) Cylinder with cylinder (axis inclined)	(02 sheets)
3.	3. Drawing of the following with complete dimensions, tolerances, materials and surface finish marks. Universal coupling (Assembly)	(01 Sheets)
	Bearings Bushed Bearing (Assembled Drawing) Ball Bearing and Roller Bearing (Assembled Drawing) Plummer Block (Detailed Drawing) Plummer Block (Assembled Drawing) Foot step Bearing (Assembled Drawing)	(05 sheets)
	Bracket Wall bracket (orthographic views)	(01 sheets)
	Pulleys Stepped Pulley V. Belt Pulley Fast and loose pulley (Assembled Drawing)	(03 sheets)

	Pipe Joints Expansion pipe joint (Assembly drawing) Flanged pipe and right angled bend joint (Assembly Drawing)	(02 sheets)
	3.6 Lathe Tool Holder (Assembly Drawing)	(01 sheets)
	3.7 Reading of mechanical component drawing	(01 sheets)
	3.8 Sketching practice of bearings, bracket and pulleys. (02 sheets)	(02 sheets)
4.	4. Electrical Circuit Diagram 4.1 Electrical circuit diagrams for house hold appliances (bulb, fan, tube, provision for plug and switch with voltmeter and energy meter connected in the circuit. 4.2 Electrical connections for lathe machine	(01 sheet)

Reference Books:

1 Machine Drawing by P.S. Gill; S.K. Kataria and Sons; Ludhiana

2. A Text Book of Machine Drawing by R.K.Dhawan; S. Chand and Co. Ltd New Delhi.

3. Machine Drawing by N.D. Bhatt; Charotar Book Depot. Anand

Delivery/Instructional Methodologies

Sr.No.	Description
1.	Chalk and Talk
2.	PowerPoint Presentation

Assessment Methodologies

Sr. No.	Description	Type
1.	Student Assignment	Direct
2.	Test	Direct
3.	Board Examination	Direct
4.	Student Feedback	Direct

Gaps in the syllabus - to meet industry/profession requirements

S.NO.	DESCRIPTION	PROPOSED ACTIONS	PO MAPPING
	N/A	N/A	N/A

Topics beyond syllabus/advanced topics

Units	Details	Hours
N/A	N/A	N/A

Web Source References

Sr. No.	URL
1.	https://nptel.ac.in/

Lesson Plan

Week	Practical		
	Lecture Day	Practical /Sheet	Detail
1st	1st	1	Limits and fits Maximum limit of size, minimum limit of size, tolerance, allowance, deviation, upper deviation, lower deviation, fundamental deviation, clearance, maximum clearance, minimum clearance
	2nd		
	3rd		
	4th		
	5th	2	Fits – clearance fit, interference fit, transition fit. Hole basis system, shaft basis system, tolerance grades.
	6th		
	7th		
2nd	8th	3.	Calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like H7/g6, H7/m6, H8/p6. Basic terminology and symbols of geometrical dimensioning and tolerances.
	9th		
	10th		
	11th		Cylinder with cylinder (equal and different diameters; axis at right

	12th	4.	angles) Cylinder with cylinder (equal and different diameters; axis at right angles)
	13th		
	14th		
3RD	15th	5.	Cylinder with cylinder (axis inclined)
	16th		
	17th		
	18th	6.	Cylinder with cylinder (axis inclined)
	19th		
	20th		
	21st		
4th	22nd	7.	Cylinder with cylinder (axis inclined)
	23rd		
	24th		
	25th	8.	Cylinder with cylinder (axis inclined)
	26th		
	27th		

	28th		
5th	29th	9.	Universal coupling (Assembly)
	30th		
	31st		
	32nd		Universal coupling (Assembly)
	33rd		
	34th		
	35th		
6th	36th		**House test-I**
	37th		
	38th		
	39th	10	Ball Bearing and Roller Bearing (Assembled Drawing)
	40th		
	41st		
	42nd		
	43rd	11	Bearings Bushed Bearing (Assembled Drawing)
	44th		

7th	45th		Ball Bearing and Roller Bearing (Assembled Drawing)
	46th		
	47th	12	Plummer Block (Detailed Drawing)
	48th		
	49th		
8th	50th		Plummer Block (Assembled Drawing)
	51st		
	52nd		
	53rd	13	Foot step Bearing (Assembled Drawing
	54th		
	55th		
	56th		
9th	57th		Foot step Bearing (Assembled Drawing
	58th		
	59th		
	60th	14	Wall bracket (orthographic views)
	61st		
	62nd		

	63rd		
10th	64th	15	Stepped Pulley
	65th		
	66th		
	67th		
	68th		
	69th		
	70th		
11th	71st	16	V. Belt Pulley
	72nd		
	73rd		
	74th		
	75th	17	Fast and loose pulley (Assembled Drawing)
	76th		
	77th		
	78th		**House Test-II**
	79th		
	80th		
	81st		

12th			
	82nd	18	Expansion pipe joint (Assembly drawing)
	83rd		
	84th		
13th	85th	19	Flanged pipe and right angled bend joint (Assembly Drawing)
	86th		
	87th		
	88th		
	89th	20	Lathe Tool Holder (Assembly Drawing)
	90th		
	91st		
14th	92nd	21	Reading of mechanical component drawing (sheets) Sketching practice of bearings, bracket and pulleys.
	93rd		
	94th		
	95th		Sketching practice of bearings, bracket and pulleys.
	96th		
	97th		
	98th		
	99th		

15th		22	Electrical circuit diagrams for house hold appliances (bulb, fan, tube, provision for plug and switch with voltmeter and energy meter connected in the circuit.
	100th		
	101st		
	102nd		Electrical connections for lathe machine
	103rd		
	104th		
	105th		
16th	106th		**House Test- III**
	107th		
	108th		
	109th		
	110th		PTM
	111st		
	112nd		