GUJARATTECHNOLOGICALUNIVERSITY

Program Name: Engineering

Level: PG

Branch: Plastic Engineering

Course/Subject Code: ME01084071

Course/Subject Name: Plastic Mould Manufacturing Techniques

w.e.f. Academic Year:	2024-25
Semester:	1st Semester
Category of the Course:	PEC

Teaching Scheme (in Hours)			**Total Credits L+T+(PR/2)**	**Assessment Pattern and Marks**				**Total Marks**
				Theory		**Tutorial/ Practical**		
L	**T**	**PR**	**C**	ESE (E)	PA/ CA (M)	PA/CA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Content:

Sr. No	**Content**	**Total Hrs**	**% Weightage**
1	Introduction : Mould making techniques, Toolroom Machines for moulds making like Lathe, Shaping, Planing, Drilling , Grinding , EDM , Wire EDM, Computer assisted machines and their importance	04	10%
2	Material for Moulds: Selection of steels – Properties of steels – common steels used for moulds – strength of materials, calculation of wall thickness for cavity – Insert size – Life of mould Non-ferrous metals for mould construction: Application – Zinc base alloys – Aluminium alloys – Beryllium copper Practically used EN materials, OHNS, GunMetal , etc. with importance and application	07	20%
3	Surface Treatment of Mould Materials: Introduction – Heat treatment process – case hardening – through hardening – nitriding – tips on successful heat treatment – vacuum hardening – cryogenic heat treatment. – Hard chrome plating – Nickel plating – chemical etching – Mould Polishing techniques	07	20%
4	Mould Making Techniques: Pantograph engraving – Hydro copying – Jig	07	20%

	boring – CNC machines – CNC Lathe –CNC Milling – CNC EDM – **CNC programming- Programming codes like G Code, M codes etc.** Advantages and its Applications – Assembly of moulds – Rapid prototyping **techniques**.		
5	Inspection and Quality Control of Moulds: Introduction to Tool Room measuring instruments – Vernier – Micrometer – Height Gauge – Slip Gauge – Dial Gauge – Measuring tapers and angles – CMM	10	15%
6	Mould Estimation, Repair and Protection : Procedure for estimating mould cost – General outline – Cost calculation – Basic moulds – Cavity – Basic functional components – Special functions etc. Introduction – Mould Repair and maintenance – scheduling mould maintenance – advantages – storage – corrosion protection – wear and lubrication – special consideration.	10	15%
	TOTAL	**45**	**100**

References:

1. Injection Mould Design by R.G.W.Pye
2. Injection mould design fundamentals by Denton and Glanvill
3. Injection Mould Design Engineering by David Kazmer
4. Mold Engineering by Herbert Rees, Mcgraw Hill
5. Fundamentals of Machining and Machine tools by Geoffrey Boothroyd and Winston A. Knight

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